

22102491406







TRANSACTIONS
OF THE
NEW YORK STATE MEDICAL ASSOCIATION.

COMMITTEE ON PUBLICATIONS.

E. D. FERGUSON, M. D., of Rensselaer County, CHAIRMAN.

J. W. S. GOULEY, M. D., of New York County.

M. C. O'BRIEN, M. D., of New York County, SECRETARY AND
EDITOR OF THE TRANSACTIONS.

PRINTED BY
THE RUMFORD PRESS,
CONCORD, N. H.

TRANSACTIONS

OF

THE NEW YORK STATE
MEDICAL ASSOCIATION,

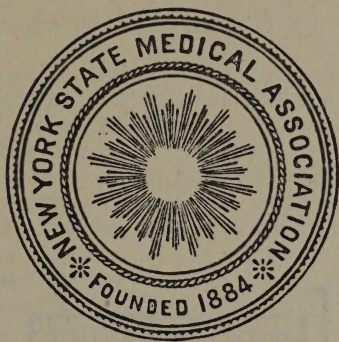
FOR THE YEAR 1898,

VOLUME XV.

EDITED FOR THE ASSOCIATION

BY M. C. O'BRIEN, M. D.,

OF NEW YORK COUNTY.



PUBLISHED BY THE ASSOCIATION:

17 WEST 43D STREET,
NEW YORK CITY.

COPYRIGHT, 1893,
By THE NEW YORK STATE MEDICAL ASSOCIATION.

WELLCOME INSTITUTE LIBRARY	
Coll.	welMOMec
Call	ser
No.	W1
	| 020

CONTENTS.

	PAGE.
Officers and Council for 1897-'98	1
Committee of Arrangements for 1898-'99	2
Officers and Council for 1898-'99	3
Officers of the Branch Associations for 1899	5
List of Presidents and Vice-Presidents	9
List of Fellows Registered at the Fifteenth Annual Meeting	14
List of Delegates and Invited Guests in Attendance	19
Address of Welcome and Report of the Committee of Arrangements	20
The President's Address—A Résumé of Medical and Surgical Progress	24
Conservative Surgery in Crushing Injuries, with a Summary of Three Hundred and Thirty-seven Cases. By JAMES G. HUNT, M. D., of Oneida County	33
On the Teaching of Physiology and Hygiene in Public Schools. By FRANK OVERTON, A. M., M. D., of Suffolk County	41
A Method of Amputation at the Knee-Joint in Gangrene of the Toes and Foot. By STEPHEN SMITH, M. D., of New York County	47
Subnormal Temperature. By LEROY J. BROOKS, M. D., of Chenango County	52
Dental Pathology in Its Relationship to General Health. By DWIGHT L. HUBBARD, M. D., of New York County	66
Urethral Stricture: A Few Thoughts on Its Genesis and Management. By J. W. S. GOULEY, M. D., of New York County	77
Tuberculosis. By F. O. DONAHUE, M. D., of Onondaga County	81
The Treatment of Cases of Pulmonary Tuberculosis that Cannot Go Away from Home. By DELANCEY ROCHESTER, M. D., of Erie County	97
Genital Neuralgia and the Genito-Reflex Pains. By FREDERICK PORTER HAMMOND, M. D., of New York County	109
Diagnosis and Therapeutics. By H. D. DIDAMA, M. D., of Onondaga County	123
Case of Fistulous Opening Between the Ileum and the Fundus of the Bladder of Fourteen Years' Duration. Laparotomy, Closure of the Openings by Suture and of the Abdominal Wall Without Drainage. Primary Union with Cure. By H. O. MARCY, M. D., of Boston, Mass.	135
Tuberculosis of the Middle Ear. By SEYMOUR OPPENHEIMER, M. D., of New York County	141

Acute Frontal Sinusitis. By HENRY L. SWAIN, M. D., of New Haven, Conn.	149
True and False Medical and Other Charities. By WIKES WASHBURN, M. D., of New York County	159
Some Thoughts on the Rational Treatment of Disease. By CHAUNCEY P. BIGGS, of Tompkins County	169
Drugs Versus Cardiac Insufficiency. By O. T. OSBORNE, M. D., of New Haven, Conn.	174
The Results of Open Operation in the Treatment of Recent Fracture of the Patella. By CHARLES PHELPS, M. D., of New York County	185
A Short Paper on Rickets. By CHARLES ALLING TUTTLE, M. D., of New Haven, Conn.	202
Neuralgic Affections of the Head. By GUSTAVUS ELIOT, M. D., of New Haven, Conn.	208
Introduction to the Discussion of Intestinal Obstruction. By PARKER SYMS, M. D., of New York County	216
The Causes of Acute Intestinal Obstruction, with a Description of Their Mechanism. By E. D. FERGUSON, M. D., of Rensselaer County	223
The Causes of Chronic Intestinal Obstruction, with a Description of Their Mechanism. By GEORGE D. STEWART, M. D., of New York County	243
Notes on Intestinal Obstruction from Impaction of Fæces, Enteroliths, and Foreign Bodies. By J. W. S. GOULEY, M. D., of New York County	249
The Diagnosis and Indications for Treatment of Acute Intestinal Obstruction. By J. D. RUSHMORE, M. D., of Kings County	262
Diagnosis and Indications for Treatment in Chronic Intestinal Obstruction. By LEROY J. BROOKS, M. D., of Chenango County	276
Intestinal Obstruction Due to Intussusception and Volvulus. By JOHN F. ERDMANN, M. D., of New York County	286
The Technics of the Operative Treatment of Intestinal Obstruction. By FREDERICK HOLME WIGGIN, M. D., of New York County	302
The Use of Catgut Sutures in Ventro-fixation of the Uterus. By J. E. JANVRIN, M. D., of New York County	320
A Note as to the Function of the Pneumogastric Nerve in the Production of Stomach Diseases. By JULIUS POHLMAN, M. D., of Erie County	324
The Passing of Alcohol. By JOHN M. FARRINGTON, M. D., of Broome County	326
Eye Lesions in Some Diseases of the Kidney. By HENRY S. OPPENHEIMER, M. D., of New York County	336
Some Observations of General Interest Regarding the Course and Management of Cataract. By J. H. WOODWARD, M. D., of New York County	344

CONTENTS.

vii

Classification and Differential Diagnosis of Some of the Commoner Forms of Insanity. By J. JOSEPH KINDRED, M. D., of New York County	361
Operative Cure of Inguinal Hernia in Men. By E. D. FERGUSON, M. D., of Rensselaer County	368
The Coccyx. By J. E. WALKER, M. D., of Steuben County	381
Insanity Following Surgical Operations. By WILLIAM D. GRANGER, M. D., of Westchester County	387
The Use of Catgut in Surgery and the Ideal Method of Preparing It. By C. C. FREDERICK, M. D., of Erie County	396
What to Do to be Saved, Being the Conclusion of an Inquiry into the Causes Leading to the Abuse of Medical Charity. By THOMAS J. HILLIS, M. D., of New York County	403
Senility. By F. W. HIGGINS, M. D., of Cortland County	442
Technique and Use of Saline Infusions. By THOMAS F. REILLY, M. D., of New York County	449
Dermoid Cysts of the Ovary. By CRAWFORD E. FRITTS, M. D., of Columbia County	469
Brief Comments on the Materia Medica, Pharmacy, and Therapeutics of the Year Ending October 1, 1898. By E. H. SQUIBB, M. D., of Kings County	474
Memoir of Professor John Cronyn. By J. C. HANNAN, M. D., of Rensselaer County	662
Memoir of John Gilbert Truax, M. D. By JOHN SHRADY, M. D., of New York County	669
Memoir of William Henry Thayer, A. B., M. D. By R. M. WYCKOFF, M. D., of Kings County	673
Memoir of William H. Robb, M. D., of Amsterdam, N. Y. By S. H. FRENCH, M. D., of Montgomery County	677
Memoir of J. R. Vanderveer, M. D.	679
Memoir of Charles Samuel Ward, M. D. By EVELYN L. BISSELL, M. D., of New Haven, Conn.	681
Memoir of Frank G. Seaman, M. D. By ELIAS LESTER, M. D., of Seneca County	685
Memoir of Samuel H. McIlroy, M. D. By JOHN SHRADY, M. D., of New York County	687
Reports of the District Branches:	
First District Branch	690
Second District Branch	691
Third District Branch	692
Fourth District Branch	695
Fifth District Branch	697
New York County Medical Association, Annual Report	709
Proceedings of the Fifteenth Annual Meeting	717
Annual Report of the Council	723
List of Fellows by District and County	729
Alphabetical List of Fellows	751

Retired Fellows	766
Non-resident Fellows	766
Corresponding Fellow	767
Deceased Fellows	769
Organizations Affiliated with the New York State Medical Association	779
Index	781

OFFICERS AND COUNCIL FOR 1897-'98.

PRESIDENT.

DOUGLAS AYRES, M. D., First District, Montgomery County.

VICE-PRESIDENTS.

SECOND DISTRICT, C. E. FRITTS, M. D., Columbia County.

THIRD DISTRICT, H. W. CARPENTER, M. D., Madison County.

FOURTH DISTRICT, C. C. FREDERICK, M. D., Erie County.

FIFTH DISTRICT, N. W. LEIGHTON, M. D., Kings County.

SECRETARY AND TREASURER.

E. D. FERGUSON, M. D., Rensselaer County.

CHAIRMAN OF THE LIBRARY COMMITTEE.

J. W. S. GOULEY, M. D., New York County.

MEMBER OF THE COUNCIL AT LARGE.

F. H. WIGGIN, M. D., New York County.

ELECTED MEMBERS OF THE COUNCIL.

FIRST DISTRICT, JOHN P. SHARER, M. D., Herkimer County.

“ “ W. H. ROBB, M. D., Montgomery County.

SECOND DISTRICT, THOS. H. HANNAN, M. D., Rensselaer County.

“ “ E. M. LYON, M. D., Clinton County.

THIRD DISTRICT, LEROY M. BROOKS, M. D., Chenango County.

“ “ W. L. AYER, M. D., Tioga County.

FOURTH DISTRICT, WM. M. BEMUS, M. D., Chautauqua County.

“ “ Z. J. LUSK, M. D., Wyoming County.

FIFTH DISTRICT, C. E. DENISON, M. D., New York City.

“ “ JOHN G. TRUAX, M. D., New York City.

COMMITTEE OF ARRANGEMENTS FOR 1898-'99.

DOUGLAS AYRES, PRESIDENT.

E. D. FERGUSON, SECRETARY.

Ex-Officio Members of the Committee.

FREDERICK H. WIGGIN, *Chairman.*

CHARLES E. DENISON, *Secretary.*

F. A. BALDWIN.

J. E. BAYNES.

W. M. BEMUS.

W. H. BIGGAM.

L. J. BROOKS.

H. W. CARPENTER.

R. B. COUTANT.

E. H. DOUGLAS.

C. C. FREDERICK.

C. E. FRITTS.

J. W. S. GOULEY.

W. D. GRANGER.

G. T. HARRISON.

W. A. HULSE.

F. W. HIGGINS.

H. C. JOHNSTON.

N. W. LEIGHTON.

I. D. LEROY.

W. LINDSAY.

Z. J. LUSK.

J. C. MACKENZIE.

J. A. MUNSON.

E. G. RAVE.

J. SHRADY.

PARKER SYMS.

E. H. SQUIBB.

W. H. THORNTON.

J. R. VANDERVEER.

H. VAN HOEVENBERG.

OFFICERS AND COUNCIL FOR 1898-'99.

The Sixteenth Annual Meeting will be held at Mott Memorial Library, in New York City, on October 24, 25, and 26, 1899.

PRESIDENT.

JOSEPH D. BRYANT, M. D.,
54 W. 36th St., New York, New York County.

VICE-PRESIDENTS.

FIRST DISTRICT, JAMES G. HUNT, M. D.,
Utica, Oneida County.

SECOND DISTRICT, DOUGLAS C. MORIARTA, M. D.,
Saratoga Springs, Saratoga County.

THIRD DISTRICT, FRANK D. REESE, M. D.,
Cortland, Cortland County.

FOURTH DISTRICT, WILLIAM M. BEMUS, M. D.,
Jamestown, Chautauqua County.

SECRETARY.

M. CHRISTOPHER O'BRIEN, M. D.,
161 W. 122d St., New York, New York County.

TREASURER.

E. D. FERGUSON, M. D.,
Troy, Rensselaer County.

CHAIRMAN OF THE LIBRARY COMMITTEE.

J. W. S. GOULEY, M. D.,
11 E. 43d St., New York, New York County.

MEMBER OF THE COUNCIL AT LARGE.

EDWARD H. SQUIBB, M. D.,
148 Columbia Heights, Brooklyn, Kings County.

ELECTED MEMBERS OF THE COUNCIL.

- FIRST DISTRICT, CHARLES H. GLIDDEN, M. D.,
Little Falls, Herkimer County; term expires 1899.
- “ “ JOHN P. SHARER, M. D.,
Little Falls, Herkimer County; term expires 1900.
- SECOND DISTRICT, E. M. LYON, M. D.,
Plattsburgh, Clinton County; term expires 1899.
- “ “ CRAWFORD E. FRITTS, M. D.,
Hudson, Columbia County; term expires 1900.
- THIRD DISTRICT, W. L. AYER, M. D.,
Owego, Tioga County; term expires 1899.
- “ “ LEROY J. BROOKS, M. D.,
Norwich, Chenango County; term expires 1900.
- FOURTH DISTRICT, ZERA J. LUSK, M. D.,
Warsaw, Wyoming County; term expires 1899.
- “ “ DELANCEY ROCHESTER, M. D.,
Buffalo, Erie County; term expires 1900.
- FIFTH DISTRICT, FREDERICK H. WIGGIN, M. D.,
New York, New York County; term expires 1899.
- “ “ CHARLES E. DENISON, M. D.,
New York, New York County; term expires 1900.

OFFICERS OF THE BRANCH ASSOCIATIONS FOR 1899.

FIRST OR NORTHERN BRANCH.

*The Fifteenth Annual Meeting will be held as appointed by the
President.*

OFFICERS.

PRESIDENT, JAMES G. HUNT, M. D.,
Utica, Oneida County.
SECRETARY, E. H. DOUGLAS, M. D.,
Little Falls, Herkimer County.

EXECUTIVE COMMITTEE.

JOHN EDWARDS, M. D., Gloversville, Fulton County.
THOMAS McGANN, M. D., Wells, Hamilton County.
W. D. GARLOCK, M. D., Little Falls, Herkimer County.
J. MORTIMER CRAWE, M. D., Watertown, Jefferson County.
ALBERT A. JOSLIN, M. D., Martinsburg, Lewis County.
N. A. CALDWELL, M. D., Hageman's Mills, Montgomery County.
G. ALDER BLUMER, M. D., Utica, Oneida County.
E. F. MARSH, M. D., Fulton, Oswego County.
GUY REUBEN COOK, M. D., Louisville, St. Lawrence County.

SECOND OR EASTERN BRANCH.

*The Fifteenth Annual Meeting will be held at Hudson, Columbia
County, on the last Thursday in June, 1899.*

OFFICERS.

PRESIDENT, D. C. MORIARTA, M. D.,
Saratoga Springs, Saratoga County.
SECRETARY, JOSEPH E. BAYNES, M. D.,
Troy, Rensselaer County.

EXECUTIVE COMMITTEE.

W. B. SABIN, M. D., West Troy, Albany County.
 E. M. LYON, M. D., Plattsburgh, Clinton County.
 C. E. FRITTS, M. D., Hudson, Columbia County.
 F. J. D'AVIGNON, M. D., Au Sable Forks, Essex County.
 GEORGE CONKLING, M. D., Durham, Greene County.
 F. J. TOMPKINS, M. D., Lansinburgh, Rensselaer County.
 F. F. GOW, M. D., Schuylerville, Saratoga County.
 H. C. VAN ZANDT, M. D., Schenectady, Schenectady County.
 H. F. KINGSLEY, M. D., Schoharie, Schoharie County.
 D. J. FITZGERALD, M. D., Glens Falls, Warren County.
 JOHN LAMBERT, M. D., Salem, Washington County.

THIRD OR CENTRAL BRANCH.

The Fifteenth Annual Meeting will be held at a place to be designated, on the first Thursday in June, 1899.

OFFICERS.

PRESIDENT, FRANK D. REESE, M. D.,
 Cortland, Cortland County.
 SECRETARY, F. W. HIGGINS, M. D.,
 Cortland, Cortland County.

EXECUTIVE COMMITTEE.

J. G. ORTON, M. D., Binghamton, Broome County.
 W. R. LAIRD, M. D., Auburn, Cayuga County.
 F. W. ROSS, M. D., Elmira, Chemung County.
 L. J. BROOKS, M. D., Norwich, Chenango County.
 H. O. JEWETT, M. D., Cortland, Cortland County.
 W. B. MORROW, M. D., Walton, Delaware County.
 MARTIN CAVANA, M. D., Oneida, Madison County.
 ELY VAN DE WARKER, M. D., Syracuse, Onondaga County.
 J. J. SWEET, M. D., Unadilla, Otsego County.
 B. T. SMELTZER, M. D., Havana, Schuyler County.
 F. G. SEAMAN, M. D., Seneca Falls, Seneca County.
 W. L. AYER, M. D., Owego, Tioga County.
 C. P. BIGGS, M. D., Ithaca, Tompkins County.

FOURTH OR WESTERN BRANCH.

The Fifteenth Annual Meeting will be held at Rochester, Monroe County, on the Second Tuesday in May, 1899.

OFFICERS.

PRESIDENT, WILLIAM M. BEMUS, M. D.,
Jamestown, Chautauqua County.
SECRETARY, WM. H. THORNTON, M. D.,
572 Niagara St., Buffalo, Erie County.

EXECUTIVE COMMITTEE.

B. C. WAKELY, M. D., Angelica, Alleghany County.
S. J. MUDGE, M. D., Olean, Cattaraugus County.
W. M. BEMUS, M. D., Jamestown, Chautauqua County.
C. C. WYCKOFF, M. D., Buffalo, Erie County.
M. W. TOWNSEND, M. D., Bergen, Genesee County.
F. H. MOYER, M. D., Moscow, Livingston County.
E. M. MOORE, JR., M. D., Rochester, Monroe County.
G. P. EDDY, M. D., Lewiston, Niagara County.
F. R. BENTLY, M. D., Cheshire, Ontario County.
H. C. TOMPKINS, M. D., Knowlesville, Orleans County.
C. S. PARKHILL, M. D., Hornellsville, Steuben County.
DARWIN COLVIN, M. D., Clyde, Wayne County.
Z. J. LUSK, M. D., Warsaw, Wyoming County.
WM. OLIVER, M. D., Penn Yann, Yates County.

FIFTH OR SOUTHERN BRANCH.

The Fifteenth Annual Meeting will be held at Brooklyn, Kings County, on the Fourth Tuesday in May, 1899.

OFFICERS.

PRESIDENT, JOSEPH D. BRYANT, M. D.,
54 W. 36th St., New York, New York County.
SECRETARY, E. H. SQUIBB, M. D.,
P. O. Box 760, Brooklyn, Kings County.

EXECUTIVE COMMITTEE.

- WILLIAM CRAMER, M. D., Poughkeepsie, Dutchess County.
WM. WATERWORTH, M. D., Brooklyn, Kings County.
ELLERY DENISON, M. D., New York, New York County.
M. C. CONNER, M. D., Middletown, Orange County.
G. W. MURDOCK, M. D., Cold Spring, Putnam County.
E. G. RAVE, M. D., Hicksville, Queens County.
W. C. WALSER, M. D., West New Brighton, Richmond County.
W. A. HULSE, M. D., Bay Shore, Suffolk County.
J. A. MUNSON, M. D., Woodbourne, Sullivan County.
H. VAN HOEVENBERG, M. D., Kingston, Ulster County.
E. F. BRUSH, M. D., Mount Vernon, Westchester County.

LIST OF PRESIDENTS AND VICE-PRESIDENTS
FROM THE FOUNDING OF THE ASSOCIATION.

1884.

PRESIDENT.

HENRY D. DIDAMA, M. D., Onondaga County, Third District.

VICE-PRESIDENTS.

FIRST DISTRICT, J. MORTIMER CRAWE, M. D., Jefferson County.

SECOND DISTRICT, TABOR B. REYNOLDS, M. D., Saratoga County.

FOURTH DISTRICT, B. L. HOVEY, M. D., Monroe County.

FIFTH DISTRICT, *N. C. HUSTED, M. D., Westchester County.

1885.

PRESIDENT.

*JOHN P. GRAY, M. D., Oneida County, First District.

VICE-PRESIDENTS.

SECOND DISTRICT, *W. H. ROBB, M. D., Montgomery County.

THIRD DISTRICT, JOHN G. ORTON, M. D., Broome County.

FOURTH DISTRICT, JOSEPH C. GREENE, M. D., Erie County.

FIFTH DISTRICT, *J. C. HUTCHINSON, M. D., Kings County.

1886.

PRESIDENT.

E. M. MOORE, M. D., Monroe County, Fourth District.

VICE-PRESIDENTS.

FIRST DISTRICT, *WILLIAM GILLIS, M. D., Franklin County.

SECOND DISTRICT, H. C. VAN ZANDT, M. D., Schenectady County.

THIRD DISTRICT, *FREDÉRIC HYDE, M. D., Cortland County.

FIFTH DISTRICT, *J. G. PORTEOUS, M. D., Dutchess County.

* Deceased.

1887.

PRESIDENT.

*ISAAC E. TAYLOR, M. D., New York County, Fifth District.

VICE-PRESIDENTS.

FIRST DISTRICT, JOHN P. SHARER, M. D., Herkimer County.

SECOND DISTRICT, L. C. DODGE, M. D., Clinton County.

THIRD DISTRICT, *GEORGE W. AVERY, M. D., Chenango County.

FOURTH DISTRICT, DARWIN COLVIN, M. D., Wayne County.

1888.

PRESIDENT.

*JOHN CRONYN, M. D., Erie County, Fourth District.

VICE-PRESIDENTS.

FIRST DISTRICT, BYRON DE WITT, M. D., Oswego County.

SECOND DISTRICT, ROBERT SELDEN, M. D., Greene County.

THIRD DISTRICT, CHARLES W. BROWN, M. D., Chemung County.

FIFTH DISTRICT, EDWIN BARNES, M. D., Dutchess County.

1889.

PRESIDENT.

*WILLIAM T. LUSK, M. D., New York County, Fifth District.

VICE-PRESIDENTS.

FIRST DISTRICT, S. H. FRENCH, M. D., Montgomery County.

SECOND DISTRICT, *R. C. McEWEN, M. D., Saratoga County.

THIRD DISTRICT, ELIAS LESTER, M. D., Seneca County.

FOURTH DISTRICT, T. D. STRONG, M. D., Chautauqua County.

1890.

PRESIDENT.

JOHN G. ORTON, M. D., Broome County, Third District.

* Deceased.

VICE-PRESIDENTS.

FIRST DISTRICT, DOUGLAS AYRES, M. D., Montgomery County.
SECOND DISTRICT, *M. H. BURTON, M. D., Rensselaer County.
FOURTH DISTRICT, E. M. MOORE, JR., M. D., Monroe County.
FIFTH DISTRICT, WILLIAM McCOLLOM, M. D. (vice WILLIAM
B. EAGER, deceased), Kings County.

1891.

PRESIDENT.

STEPHEN SMITH, M. D., New York County, Fifth District.

VICE-PRESIDENTS.

FIRST DISTRICT, DOUGLAS AYRES, M. D., Montgomery County.
SECOND DISTRICT, A. T. VAN VRANKEN, M. D., Albany County.
THIRD DISTRICT, J. D. TRIPP, M. D., Cayuga County.
FOURTH DISTRICT, R. J. MENZIE, M. D., Livingston County.

1892.

PRESIDENT.

*JUDSON B. ANDREWS, M. D., Erie County, Fourth District.

VICE-PRESIDENTS.

FIRST DISTRICT, W. D. GARLOCK, M. D., Herkimer County.
SECOND DISTRICT, G. E. McDONALD, M. D., Schenectady County.
THIRD DISTRICT, LEROY J. BROOKS, M. D., Chenango County.
FIFTH DISTRICT, H. VAN HOEVENBERG, M. D., Ulster County.

1893.

PRESIDENT.

S. B. W. McLEOD, M. D., New York County, Fifth District.

VICE-PRESIDENTS.

FIRST DISTRICT, R. N. COOLEY, M. D., Oswego County.
SECOND DISTRICT, J. C. HANNAN, M. D., Rensselaer County.
THIRD DISTRICT, N. JACOBSON, M. D., Onondaga County.
FOURTH DISTRICT, Z. J. LUSK, M. D., Wyoming County.

* Deceased.

1894.

PRESIDENT.

THOS. D. STRONG, M. D., Chautauqua County, Fourth District.

VICE-PRESIDENTS.

FIRST DISTRICT, *ISAAC DE ZOUCHE, M. D., Fulton County,

SECOND DISTRICT, J. C. BENHAM, M. D., Columbia County.

THIRD DISTRICT, HOMER O. JEWETT, M. D., Cortland County.

FIFTH DISTRICT, J. D. RUSHMORE, M. D., Kings County.

1895.

PRESIDENT.

AUSTIN FLINT, M. D., New York County, Fifth District.

VICE-PRESIDENTS.

FIRST DISTRICT, DANIEL KLOCK, M. D., Montgomery County.

SECOND DISTRICT, *W. H. HODGMAN, M. D., Saratoga County.

THIRD DISTRICT, F. W. PUTNAM, M. D., Broome County.

FOURTH DISTRICT, M. W. TOWNSEND, M. D., Genesee County.

1896.

PRESIDENT.

DARWIN COLVIN, M. D., Wayne County, Fourth District.

VICE-PRESIDENTS.

FIRST DISTRICT, C. H. GLIDDEN, M. D., Herkimer County.

SECOND DISTRICT, THOMAS WILSON, M. D., Columbia County.

THIRD DISTRICT, *F. G. SEAMAN, M. D., Seneca County.

FIFTH DISTRICT, J. R. VANDERVEER, M. D., Orange County.

1897.

PRESIDENT.

CHARLES PHELPS, M. D., New York County, Fifth District.

* Deceased.

VICE-PRESIDENTS.

FIRST DISTRICT, R. N. COOLEY, M. D., Oswego County.

SECOND DISTRICT, E. M. LYON, M. D., Clinton County.

THIRD DISTRICT, ROBERT ABERDEIN, M. D., Onondaga County.

FOURTH DISTRICT, ALVIN A. HUBBELL, M. D., Erie County.

1898.

PRESIDENT.

DOUGLAS AYRES, M. D., Montgomery County, First District.

VICE-PRESIDENTS.

SECOND DISTRICT, C. E. FRITTS, M. D., Columbia County.

THIRD DISTRICT, H. W. CARPENTER, M. D., Madison County.

FOURTH DISTRICT, C. C. FREDERICK, M. D., Erie County.

FIFTH DISTRICT, N. W. LEIGHTON, M. D., Kings County.

LIST OF FELLOWS REGISTERED AT THE
FIFTEENTH ANNUAL MEETING IN
NEW YORK CITY.

Held October 18, 19, and 20, 1898.

FIRST DISTRICT.

FULTON COUNTY.

Edwards, John, Gloversville.

HERKIMER COUNTY.

Garlock, W. D., Little Falls.	Santry, A. B., Little Falls.
Glidden, C. H., Little Falls.	Sharer, John P., Little Falls.

MONTGOMERY COUNTY.

Ayres, Douglas, Fort Plain.	Johnson, R. G., Amsterdam.
-----------------------------	----------------------------

ONEIDA COUNTY.

Hunt, James G., Utica.	Reid, W. B., Rome.
Palmer, Henry C., Utica.	

SECOND DISTRICT.

ALBANY COUNTY.

Haynes, John U., Cohoes.	Van Vranken, A. T., Watervliet.
Swan, William E., Albany.	

CLINTON COUNTY.

Lyon, E. M., Plattsburgh.

COLUMBIA COUNTY.

Bradley, O. H., Hudson.	Fritts, Crawford E., Hudson.
-------------------------	------------------------------

ESSEX COUNTY.

Barton, Lyman G., Willsboro.

GREENE COUNTY.

Selden, Robert, Catskill.

RENSSELAER COUNTY.

Cahill, John T., Hoosick Falls. Ferguson, E. D., Troy.

Church, T. C., Valley Falls. Finder, William, Jr., Troy.

SARATOGA COUNTY.

Humphrey, J. F., Saratoga Warner, J. W., Saratoga Springs.
Springs.

THIRD DISTRICT.

BROOME COUNTY.

Farrington, J. M., Binghamton.

CHENANGO COUNTY.

Brooks, Leroy J., Norwich.

CORTLAND COUNTY.

Didama, E. A., Cortland. Higgins, F. W., Cortland.

MADISON COUNTY.

Carpenter, H. W., Oneida. Dodge, A. P., Oneida Castle.

ONONDAGA COUNTY.

Didama, H. D., Syracuse. Parsons, Israel, Marcellus.

Donohue, F. O., Syracuse.

OTSEGO COUNTY.

Leaning, J. K., Cooperstown.

TIOGA COUNTY.

Ayer, W. L., Owego. Cadý, George M., Nichols.

TOMPKINS COUNTY.

Biggs, Chauncey P., Ithaca.

FOURTH DISTRICT.

ERIE COUNTY.

Frederick, C. C., Buffalo. Rochester, DeLancey, Buffalo.
 Pohlman, Julius, Buffalo.

MONROE COUNTY.

Hovey, B. L., Rochester.

STEUBEN COUNTY.

Walker, J. E., Hornellsville.

WYOMING COUNTY.

Lusk, Z. J., Warsaw.

FIFTH DISTRICT.

DUTCHESS COUNTY.

Barnes, E., Pleasant Plains. LeRoy, J. D., Pleasant Valley.
 Cramer, Wm., Poughkeepsie. Van Etten, C. S., Rhinebeck.

KINGS COUNTY.

Baker, Frank R., Brooklyn.	North, Nelson L., Brooklyn.
Baker, George W., Brooklyn.	Pray, S. R., Brooklyn.
Biggom, W. H., Brooklyn.	Rushmore, J. D., Brooklyn.
Feeley, James F., Brooklyn.	Russell, Wm. G., Brooklyn.
Hicks, E. E., Brooklyn.	Squibb, E. H., Brooklyn.
Leighton, N. W., Brooklyn.	Squibb, E. R., Brooklyn.
Little, Frank, Brooklyn.	Steinke, H. C. O., Brooklyn.
Lloyd, T. M., Brooklyn.	Sullivan, J. D., Brooklyn.
McCollom, William, Brooklyn.	Waterworth, William, Brooklyn.
Milbury, Frank S., Brooklyn.	Wieber, Adolph, Brooklyn.

NEW YORK COUNTY.

Alexander, Samuel, New York.	Davis, J. Griffith, New York.
Anderson, R. H., New York.	Davis, Robert C., New York.
Arnold, Glover C., New York.	DeLandeta, I. B., New York.
Baldwin, F. A., New York.	Delphey, Eden V., New York.
Biggs, H. M., New York.	Denison, C. E., New York.
Bryant, J. D., New York.	Denison, E., New York.

Dudley, A. P., New York.	O'Brien, M. C., New York.
Einhorn, Max, New York.	Oppenheimer, H. S., New York.
Eliot, Ellsworth, New York.	Oppenheimer, S., New York.
Erdmann, John F., New York.	Phelps, Charles, New York.
Ferguson, Frank, New York.	Pooler, H. S., New York.
Flint, Austin, Jr., New York.	Purple, S. S., New York.
Gouley, J. W. S., New York.	Rathbourn, C., New York.
Hammond, F. P., New York.	Reilly, T. F., New York.
Harris, E. Eliot, New York.	Sayre, L. A., New York.
Harrison, Geo. T., New York.	Sayre, R. H., New York.
Hepburn, Neil J., New York.	Seaman, L. L., New York.
Hillis, T. J., New York.	Shrady, A. M., New York.
Hodgman, Abbot H., New York.	Shrady, John, New York.
Hubbard, Dwight L., New York.	Shrady, John E., New York.
Judson, A. B., New York.	Silver, Henry M., New York.
Kalish, Richard, New York.	Smith, Stephen, New York.
Lichtschein, Louis, New York.	Stearns, H. S., New York.
Lockwood, C. E., New York.	Stewart, F. E., New York.
Ludlow, O. C., New York.	Stewart, George D., New York.
Lukens, Anna, New York.	Syms, Parker, New York.
Lusk, William C., New York.	Wallach, J. G., New York.
Lynch, P. J., New York.	Wainwright, J. W., New York.
McGauran, George, New York.	Walsh, S. J., New York.
Mackenzie, J. C., New York.	Wanders, H. W., New York.
McNicholl, T. A., New York.	Washburn, W., New York.
McLeod, S. B. W., New York.	Wiggin, F. H., New York.
Manley, T. H., New York.	Woodward, J. H., New York.
Moran, James, New York.	Wyeth, John A., New York.
Newman, Robert, New York.	

ORANGE COUNTY.

Conner, M. C., Middletown.	Townsend, C. E., Newburgh.
Pillsbury, Burke, Middletown.	Woodhull, E. D., Monroe.

RICHMOND COUNTY.

Johnston, H. C., New Brighton.

SUFFOLK COUNTY.

Hulse, H. C., Bay Shore.	Overton, Frank, Patchogue.
Lindsay, Walter, Huntington.	

DELEGATES FROM OTHER MEDICAL ORGANIZATIONS AND INVITED GUESTS IN ATTENDANCE.

CONNECTICUT.

T. D. CROTHERS, M. D., HARTFORD . . .	Invited guest.
GUSTAVUS ELIOT, M. D., NEW HAVEN . . .	Invited guest.
O. T. OSBORNE, M. D., NEW HAVEN . . .	Delegate.
HENRY L. SWAIN, M. D., NEW HAVEN . . .	Delegate.

MAINE.

E. E. HOLT, M. D., PORTLAND . . .	Delegate.
G. M. WOODCOCK, M. D., BANGOR . . .	Delegate.

MASSACHUSETTS.

J. F. A. ADAMS, M. D., PITTSFIELD . . .	Delegate.
---	-----------

NEW JERSEY.

W. J. CHANDLER, M. D., SOUTH ORANGE . . .	Invited guest.
I. S. LONG, M. D., FREEHOLD . . .	Delegate.
E. B. SILVERS, M. D., RAHWAY CITY . . .	Delegate.
EDWARD STACHLIN, M. D., NEWARK . . .	Delegate.
CHARLES YOUNG, M. D., NEWARK . . .	Delegate.

PENNSYLVANIA.

W. B. ATKINSON, M. D., PHILADELPHIA . . .	Invited guest.
ISRAEL CLEAVER, M. D., READING . . .	Delegate.
SOLOMAN S. COHEN, M. D., PHILADELPHIA . . .	Delegate.
WM. L. ESTES, M. D., SOUTH BETHLEHEM . . .	Delegate.
W. MURRAY WEIDMAN, M. D., READING . . .	Delegate.

VERMONT.

A. J. MILLER, M. D., BRATTLEBORO . . .	Delegate.
--	-----------

ADDRESS OF WELCOME AND REPORT OF THE COMMITTEE OF ARRANGEMENTS.

By FREDERICK HOLME WIGGIN, M. D., Chairman of the Committee.

GENTLEMEN: It now becomes my pleasant duty to welcome you, on behalf of the Council and the Committee of Arrangements, to our metropolitan city, and to the fifteenth annual meeting of the New York State Medical Association. Your Committee has laboured long and arduously during the past year in the preparation for this auspicious occasion, and has endeavoured to constantly bear in mind the objects for which this society was established, *i. e.*, the cultivation and advancement of the science of medicine, the promotion of public health, the maintenance of the honour and character of the medical profession, and the establishment and furtherance of cordial professional relations and fellowship between the medical profession of this and other states.

With the rendering of this report, the preliminary labours of your Committee are ended, and the time has come for you to show your interest and do your duty by attending the scientific sessions, encouraging the writers of the papers by taking part in the discussions, and by attending the social functions which have been prepared for your entertainment. We are more fortunate than usual in having with us at this time many gentlemen whom, I am sure, you will be pleased to welcome, delegates from other state societies, who have come considerable distances to extend to us their sympathy, and to show their interest in the work which we are endeavouring to do.

Your Committee has endeavoured to attract a larger attendance to the meeting from those living at a distance by seeking a reduction in the railroad fare. This the Trunk Line Association has seen fit to grant, giving a rate of one

and one third fares on the certificate plan to those paying seventy-five cents or more fare coming to the meeting, provided that one hundred visit New York at this time. The Committee has also endeavoured to increase the attractiveness of the social side of this gathering by providing for a collation this evening, and also by arranging for a banquet at the Hotel Manhattan, East 42d Street and Madison Avenue, Wednesday evening at seven o'clock, on which occasion a number of prominent gentlemen have promised to be present and entertain us, as well as join us at the festive board.

Among other changes which seemed wise to the Committee was to have the registry office open at nine o'clock each morning, and have the morning session begin promptly at ten o'clock, and the afternoon session at two o'clock. While there are a great many papers to be disposed of, it will be possible to complete the programme without undue haste, provided those in attendance are in their seats promptly at the hours mentioned—ten o'clock for the morning session, two o'clock for the afternoon session, and half past seven o'clock for the evening session. The Committee feels that it will be necessary for the papers on the programme to be called exactly at the time stated, regardless of the number present. The Committee hopes that the members will see the discourtesy of asking others to read papers to nearly empty benches. In this connection, special attention is called to the fact that on Wednesday morning, at ten o'clock, the first order of business will be the reception of delegates from other state societies. The Committee hopes that those taking part in the discussion will make their remarks brief and relevant, bearing in mind that only ten minutes can be allowed to each participant.

The Committee also thought it wise, this year, to change the form of the programme from the sheet, formerly in use, to the booklet form, the latter being easier to carry in the pocket, and more convenient for those desiring to preserve it as a souvenir. Although a copy of this programme has been mailed to every Fellow of the Association and to the invited

guests, a few words, with reference to it, may be of interest. Your Committee, by dint of active correspondence, has succeeded in securing forty-nine papers, and a lantern-slide exhibit, in addition to the President's address.

An analysis of the programme shows that the

First District sends	.	.	.	.	.	.	1 paper.
Second " "	.	.	.	.	.	.	4 papers.
Third " "	.	.	.	.	.	.	8 "
Fourth " "	.	.	.	.	.	.	4 "
Fifth " "	.	.	.	.	.	.	25 "
Connecticut "	.	.	.	.	.	.	4 "
Massachusetts "	.	.	.	.	.	.	1 paper.
Pennsylvania "	.	.	.	.	.	.	1 "
Texas "	.	.	.	.	.	.	1 "

In these five districts, Fellows of the Association from eighteen counties, and invited guests from four states, have contributed papers in the following proportions:

First District, Oneida County	.	.	.	.	.	.	1
Second " Albany "	.	.	.	.	.	.	1
" " Columbia "	.	.	.	.	.	.	1
" " Rensselaer "	.	.	.	.	.	.	2
Third " Broome "	.	.	.	.	.	.	1
" " Cortland "	.	.	.	.	.	.	1
" " Chenango "	.	.	.	.	.	.	2
" " Onondaga "	.	.	.	.	.	.	2
" " Seneca "	.	.	.	.	.	.	1
" " Tompkins "	.	.	.	.	.	.	1
Fourth " Erie "	.	.	.	.	.	.	2
" " Steuben "	.	.	.	.	.	.	1
" " Wyoming "	.	.	.	.	.	.	1
Fifth " Kings "	.	.	.	.	.	.	2
" " New York "	.	.	.	.	.	.	18
" " Queens "	.	.	.	.	.	.	1
" " Suffolk "	.	.	.	.	.	.	1
" " Westchester "	.	.	.	.	.	.	3
Other states	.	.	.	.	.	.	7

The forty-nine scientific contributions may be classified, as regards their subject-matter, as follows :

Surgery	17
Medicine	7
Obstetrics and Gynaecology	5
Eye and Ear Diseases	4
Materia Medica	2
Physiology	2
Insanity	2
Pathology	1
Nose and Throat Diseases	1
Genito-Urinary Diseases	2
State Medicine	1
Anthropology	1
Medicine and Medical Ethics	2
Orthopœdic Surgery	1
Memoir	1

Hoping that you, in your turn, will keep in mind the objects for which this Association stands, and will seek to further its interests during our few days together, I again bid you welcome, and declare the fifteenth annual meeting open.

THE PRESIDENT'S ADDRESS.—A RESUME OF MEDICAL AND SURGICAL PROGRESS.

BY DOUGLAS AYRES, M. D., of Montgomery County.

October 18, 1898.

FELLOWS OF THE NEW YORK STATE MEDICAL ASSOCIATION: We meet at this time for our pleasure and instruction. I say pleasure, for these meetings are the bright spots, the resting-places along the highway of our professional lives, where, freed from our ever-active, ever-arduous duties, we meet, for a brief time, to compare the results of our varied experiences, the results of patient, earnest effort, effort to discover the causes, prevention, and cure of disease.

From these results, a vast fund of experience is treasured, experience which is thoroughly practical, and it is this that makes us truly useful to each other and of value as physicians in the localities in which we live. Although we may have had a long course of preparatory work,—in a word, may have been well educated for the practice of our profession, may number many loyal ones among our employers, who are ever ready to attest to our superior knowledge and marked skill in the healing art,—yet we fully realise that without personal interviews with our professional brethren, without being able to compare our work in meetings of this character, without access to the writings of the patient delvers into the underlying principles that form the foundation of medical and surgical science, from which new truths are constantly being evolved, we should soon find ourselves far behind, out of touch with ever-advancing scientific thought.

Like our carefully-compiled books of fifteen and twenty years ago, which have never been revised, we find the principles, but the additions, the outgrowth, the results, of pa-

tient, scientific work are wanting. We are nearing the close of a century that is marked with wonderful discoveries in every science, and I venture the assertion that our own science is not behind in scientific work and general progress. Patient investigation has added each year to our knowledge of treatment, until we are at present placed upon a safe and sure foundation. The very successful results in the treatment of fevers (especially those of a zymotic character) present a striking illustration of the amount of work done, of labourious, careful study to invent and perfect the instruments that have made possible the wonderful discoveries, and thereby led up to the proper course of medical procedure. I refer to the fever thermometer and the microscope. A short review of their history may not prove uninteresting in this connection.

At a very early period in the history of medicine, the importance of temperature as a diagnostic symptom in disease was acknowledged. Hippocrates referred diseases to two principal causes, climate and diet, and, relying chiefly upon observation, we believe heat to be the chief diagnostic symptom of diseases of an acute character. But centuries passed until Sanctorius of Padua, early in the sixteenth century, invented and made use of a thermometer for determining the temperature of the human body. Then Boerhavius and Van Swieten taught its importance. DeHoen of Vienna was the first, however, to bring out clearly the importance of thermometry as a means of diagnosis. In England, Martin in 1740, Hunter in 1775 and '78; in France, Lavoisier in 1780, Chosoat in 1820, substantiated the former; but not until 1835 was the subject again formally and comprehensively opened, at which time Becquerel and Breschet published their investigations on temperature in the human body, in health and disease.

It was left, however, to Wunderlich, in 1851, to make use of the thermometer in a vast number of cases in his clinic, and when his observations reached 100,000, it seemed to him to determine the very important pathological question that diseases, and especially typhoid fever, obeyed certain fixed laws,

as evidenced by the similarity and regularity of the temperatures. His writings and tables of temperatures attest the great and lasting work which he accomplished.

We possess, in this little instrument, one of as great value to us as the compass to the mariner when he sails out upon the trackless deep, for by it we can determine the course of disease and avert what without it would be undiscoverable danger.

But again the hidden causes of many "ills that flesh is heir to" have been discovered, and clear, practical, logical demonstration has fixed the value of the discovery and won for it a high position in medical science. I refer to bacteriology, and this has been made possible by the wonderfully perfect development of the microscope. In the seventeenth century powerful glass magnifiers were made use of for scientific investigation, and the names of Malpighi, Lieberkuhn, Hook, Van Leuwenhoek, and others are prominently connected with its use in the single lense form at this time. A writer has suggested that of the above Van Leuwenhoek may with propriety be called the father of microscopy. Many names have been added to the list of patient investigators in the development and perfection of this instrument. Among the more prominent are Spencer, Tolls, and Wales in our own country; Ross, Powell, Smith, and the Becks in England. Many more names might be mentioned of those who in recent years have helped to bring the lens up to its present power and nicety of adjustment. Van Leuwenhoek discovered (early in the seventeenth century) micro-organisms in various substances, proved clearly that they differed in form, that they moved, and by comparison determined their size or measurement. Ehrenberg, early in the present century, described several varieties of bacteria. In 1863 some progress was made in establishing the connection of bacteria with disease, but to Pasteur belongs the honour of clearly establishing (in 1869) the fact that certain diseases are due to micro-organisms. Koch, in 1875, gave a minute description of the anthrax bacillus, and cultivated the germ in a

medium prepared for the purpose. And again, Pasteur with his assistants made sure the evidence of its connection with disease by producing the identical disease in animals by inoculation with pure cultures.

From that time it has rapidly grown into a science, and a great number have entered the ranks of the earnest, patient workers who are contributing each year facts that will prove of immense value to our profession. We can hardly estimate the possibilities of the discovery and its bearing upon the medical and surgical work of the future. We know that in its present state of development its value to us is almost beyond comparison, and through it and by it grand and perfect results have been attained.

On March 24, 1882, Koch made known his discovery of the tubercle bacillus before the Physiological Society of Berlin, and in a masterly paper proved that tuberculosis is infectious and caused by this bacillus. All honour to Koch! What a boon he has conferred upon our race! For, knowing the cause of this terrible scourge of mankind, we can provide against it—can do much to prevent its ravages.

The work for the past few years done in many of our larger cities to this end, especially in Philadelphia and New York, and the excellent results obtained, attest the possibilities to be looked for in the future. New York stands foremost in the rank of cities that have adopted many precautions necessary for the prevention of this disease. And what a grand field! for here are centered nearly half the population of the Empire state. Knowing the cause of this malady, and looking back over a series of years and calling up from the memory our individual experiences of its ravages (the result of ignorance as to its cause), we shudder, but in the brightness of the present light confidence has given place to fear, and we hail the halcyon time when this disease will be as rare as any other of the infectious class.

The bacillus of diphtheria, found in diphtheritic membrane by Löffler in 1884, was another great advance in the discovery of the origin of infectious diseases, and if we dif-

ferentiate between the genuine and so-called cases of diphtheria, the strongest proof is given that the former is produced by this bacillus, although some doubts have been expressed as to whether it be true in every case.

The discovery by Koch of the common bacillus of cholera in 1883 and the discovery by Eberth in 1880 of the bacillus of typhoid fever are other great advances in aetiological research, which enable us to provide against these diseases. The study and treatment by immunisation of all these diseases, and especially diphtheria, is being prosecuted with untiring energy, and with results that are indeed flattering, and we may well look forward to the time when we can wage successful warfare on all forms of pathogenic bacteria.

This knowledge has opened still another field for investigation—that of hygiene—and has directed examination into those unsanitary conditions which are proven by this comparatively new light to be such important factors in the production and dissemination of disease. We refer with pride to the perfect systems of sewerage, and the supply of pure water, not alone in our larger cities, but in almost every city and village throughout our state. Our public conveyances and our streets were never cleaner, evidencing the time and thought given by those who realise the importance of these measures. We find that our physicians are alive to the proper preparation of the sick-room, to all the requirements of the more advanced thought in and about the dwelling, to the proper ventilation and plumbing of public buildings, and especially those very important places to be guarded—our public schools. In a word, this science has given us a new impulse, and we have learned to realise the force of the thought, "Cleanliness is, indeed, next to Godliness."

From the study of the pathogenic bacteria has been evolved that of the ptomaines—these peculiar alkaloids had been discovered in putrefying substances containing various kinds of bacteria—but we are especially indebted to Brieger for discovering them in pure cultures of pathogenic bacteria. The part they play as to their injurious effects upon the

economy will in time be definitely known, and will undoubtedly determine the cause of many hitherto obscure symptoms. Various other toxic products of bacteria have been found, and are being classified and their toxic power established.

In the light of our present knowledge, surgical procedures have been almost completely revolutionised, and asepsis and antisepsis deservedly hold full sway. It is our pride that we live in the century that can be credited with so great advances in this branch of our science, and that so much has been done within a few years. Asepsis and antisepsis have made possible the most conservative procedures in injuries of the extremities and diseased conditions, thereby saving to the labouring classes especially, those members which are of so great importance to them in earning a livelihood for themselves and their families; all kinds of deformities of these parts are now treated by surgical means with the most flattering results. The work in brain surgery is fast developing, and that which has been done successfully attests the possibilities of operative procedures in the future in this dangerous field. The wonderful results in abdominal work—the removal of all the various growths of diseased organs, even the stomach in its entirety; the repair of injuries of the bowels with and without resections—all attest the thought, the patient, intelligent work, the devotion to science, that have led up to and made possible work of this character.

These wonderful results lead us to ask ourselves the question: Why such recent rapid advancement? The answer is that the inherent desire of the human mind to question, to investigate, has been offered full scope. This has developed new lines of thought, from which have been evolved new methods of procedure, and, stimulated by the grand results of the present, the possibilities of the future are beyond our comprehension. The great number of medical colleges, their broader, more perfect curriculum—the increased facilities for imparting knowledge in each of the various branches, our post-graduate schools, with their large hospitals, where the student is daily instructed in the most approved operative

work—our means for rapid traveling and communication, our great number of books and periodicals, giving us the thought and work of others in the shortest time, not only in our own country but in every part of the civilised world, are the prominent factors that have led up to these results, and the record that we are making to complete the surgical history of the century will long remain a memorial of the scientific research, untiring energy, and perfectness of technique of the surgeons of the present.

Our medical literature stamps the present as an age of progress in general medicine. The vast amount of work done in the laboratory has inaugurated a new line of thought, based upon close observation and experiments, enabling us to treat disease with a greater degree of accuracy, and promising grand results both in prevention and treatment in the future. Much has been added during the past few years by these means, which offer the best course to reach results that we know have a tenable foundation.

A very notable addition is that of the serum test—as to its agglutinating effects—in diseases of an infectious character, especially for typhoid fever, the result of the investigations of Vidal. The great importance of some means of differentiating this fever from others, of some positive assurance of the certainty of its presence in its inception, has always been recognised, and we are assured by investigators of every country that the test is of great value. It is said that it has been applied in a great many instances where it was definitely known that the cases were true typhoid, and that it has seldom failed. The late Dr. Pepper says, in his summary of the year's work in general medicine:

“In the case of certain typhoid, with negative results, it has often happened that the proportion of blood-serum to culture has been incorrect, that the cultures were unreliable, and that the test was not repeated at suitable times. In the case of positive results in other diseases, it has happened that previous attacks of typhoid fever did not exist,—that is, the local intestinal lesions and the typhoid symptoms,—and yet the bacillus was present in the spleen

and other organs. This is of interest in connection with the rare cases of general typhoid, septicaemia, and especially important in its bearing upon reported instances of positive Vidal reactions in the absence of typhoid fever, as determined by course, symptoms, and lesions."

He adds further :

"We have become so thoroughly convinced of the value of the test that we should hesitate to diagnose typhoid fever in any case in which repeated examinations, made in approved fashion, failed to reveal agglutination."

If still further investigation proves this test to be perfectly reliable, it is indeed a great, a valuable, advance in diagnosis; and the same method, extended to other diseases, offers possibilities in the near future that may go far to establish the practice of medicine as an exact science. We are still in doubt with regard to the efficacy of treatment recently advised for tuberculosis, but the researches of Koch and others have furnished facts that must lead up to results that will be of great value in the treatment of this subtle disease. Uncertainty is fast being relegated to the history of the past, and demonstration has taken its place, marking an epoch in the history of medicine rich in those truths which go to make up a perfect science.

It is my earnest hope that this Association will continue to do its part toward contributing to this grand result. Its work has been of a high order, of an order calculated to stimulate us to renewed effort with each succeeding year. Our older Fellows have done noble work, have been with us many times at great personal sacrifice; and, as we meet them year after year, ever faithful to the interests of this Association, and listen to their instructive papers and criticisms, clear, logical, concise exponents of a ripe experience, we are stimulated by their noble example to greater exertion, to the end that the enviable position which we have attained by their untiring zeal shall be held by our united effort. We know your past record, that many of you, even though you may be

pressed with ever-urgent demands upon your time, will give us the benefit of your experience, will furnish us material for thought and criticism.

That the work in the future may continue to be of the highest order is, I know, the earnest desire of every member of this Association. With this in view, you will pardon me for suggesting that every Fellow consider that our welfare is in his especial care, and, even though he may be called upon to make some sacrifices, let him make them with the thought that it is a duty he owes to himself as well as to this Association, that a record is here being made that, while life lasts, will be a source of the greatest pride, a record against which time will not prevail.

CONSERVATIVE SURGERY IN CRUSHING INJURIES, WITH A SUMMARY OF THREE HUNDRED AND THIRTY-SEVEN CASES.

By JAMES G. HUNT, M. D., of Oneida County.

October 18, 1898.

It is daily becoming more apparent to those of our profession who impartially observe the evolution of medical science that much of the practice of medicine which has resulted in what is known as "practical experience" is not entirely compatible with the present teaching in our medical schools. The extraordinary progress may be ascribed to the facilities in scientific communication between the Old and the New Worlds and the constant increase of inventions and discoveries within the last half century, whereby medicine and surgery have undergone a great revolution. The contrast is too striking to be overlooked; and if we only recall that no list of text-books whatever appears in the catalogues of our medical schools of fifty years ago, and think of the constantly increasing number of new series of text-books on all branches of medical and surgical science to-day, we may rightly assert that the systems of nosologies of our early professional brothers and teachers, however useful in former times, are no longer standard sources of information. The first mention made of "books of reference" appears in the announcement of the summer session of Harvard school, beginning March 12, 1866. The text-books on general surgery were Drewitt and Erichson; on "operative surgery," Malgaigne and Pancoast, and for collateral reading, Boden and Holmes. My intention is to call your notice to a subject that is approved by the best surgeons of the day, and, in this connection, I

have reference to what may be called "Conservative Surgery in Crushing Injuries."

I have been professionally associated with railroad men for many years and have been called upon to do the surgical work of several different mills and factories, and I know that an injury to an employé in a large corporation often causes serious consequences. It means claims for damages many times, and especially where the injured person is a woman. The loss of a finger disfigures her for life and lessens her chances of matrimony, and when she comes before a jury she enlists their sympathy to such a degree that large sums are granted, so that these same mills and railroad companies are looking for the man who will do as little cutting as possible and save life and limb, that the person suing can have no claim for damages.

In my experience in one mill alone for over twenty-five years, I have so managed the cases that there was not a single claim for damages. The amount of time and work it has taken has well repaid the company for the surgeon's services. We are often called to look at a crushed finger, hand, or foot, when, to all appearances, there is no hope of saving the member, and we entertain a disposition to amputate. It is almost always best to wait and see what can be done to preserve its integrity. The loss of a finger may seem of very little importance to a surgeon, but to a man who earns his living with his hands, it is a most serious matter. I have made it a rule not to sacrifice the smallest part of a finger when there is a possibility of saving it.

I once heard a famous surgeon remark, "A quaint brother might be inclined to place the subject of conservative surgery in the category of 'old chestnuts.'" Granting this to be the case, it is, nevertheless, a sound chestnut.

Many amputations are hastily made. For instance, a compound comminuted fracture, with muscles and deep-seated tissues badly lacerated, presents itself. As a rule, amputation is the one idea that the surgeon's intellect grasps from the scene before him. There are few surgeons who cannot

point to at least one or two cases that have come under his observation, in which the prerogative of amputation has been abused. Is the injured limb always looked over, and examined carefully and minutely? Is not the operation hurried by the thoughts of having a beautiful stump? The surgeon should keep this one great truth before his mind's eye, "that to have saved one limb is more to his credit than to have removed, no matter how skillfully, a hundred."

I have heard a good many clever things said about conservative surgery, but one of the best of them, which it would not be out of place to repeat here, was: "In surgery, laziness and bigotry sometimes call themselves conservative." Opposed to this are discontent and love of novelty. We have been taught a good many things, and have learned one thing, that almost anything is possible by the use of antiseptic methods in the treatment of crushed limbs. We meet with a class of injuries in factories, mills, and on the railroads, that is seen nowhere else in life. We meet with lacerations and contusions of soft parts, with crushing and comminution of bone. There is one principle to guide us, and that is, where we have a warm foot, or warmth in an extremity, we should use antiseptic precautions, put the limb in the best possible condition, and wait. If there be circulation of blood in the parts, there will be a re-establishment of living functions, and where you have moving blood, you have building material. You can wait with safety, if you know that the site of the injury has been perfectly asepticised.

With all the modern conveniences at our command of wiring bones together, and of removing all fragments, we can put these injured limbs in good condition, and then we can observe progress or retrogression at leisure. As I once heard a good surgeon, with years of experience, say, "To teach a man to save a leg or an arm, when it is almost torn from his body, is the province of conservative surgery; to cleanse, watch, and wait for Nature to build up and save the limb, that is science, and that is conservative surgery." Most people are afraid that when a surgeon is called in, no matter how slight

or how grave the injury, he will advise cutting off the limb. Little do they understand that it is the duty of the surgeon to the company that employs him, as well as to the patient himself, to practise conservative surgery.

I have in mind now quite a large number of cases where the fingers were nearly severed, hanging by a few shreds only, and they are in fairly good condition, so much that the men have the use of them and can do a good day's work. It only goes to show what can be done with proper care and strict antiseptic precautions.

In conclusion, I will cite a few of the more important cases that have come under my care, and also present a tabulated statement of eight hundred and eighty-seven cases of that class known as contused and crushed wounds:

November 11, 1892, I was called to see Mr. S. S., an employé of the J. H. Williams Company. When I arrived, I found him in a semi-conscious condition. I learned from his fellows that he went to the elevator-shaft to ascertain the whereabouts of the elevator; in so doing, he leaned forward to look toward the bottom of the shaft, and while he was in this position some one started the elevator from above and in its descent it caught his head, crushing it between the elevator and a large bar across the entrance. I found that his head was a shapeless mass, with many scalp wounds and fractures of the temporal and zygomatic portion of malar, occipital, nasal, superior maxillary, and palate bones; all the teeth of the upper jaw were torn from their sockets, and there was profuse haemorrhage from the ears, nose, and mouth. While at the shop, I applied a temporary dressing and ordered him removed to the hospital, but they insisted on taking him home. At this time, I had little hope of his recovery, as he was suffering severely from shock. After some five or six hours, reaction set in and I removed the clots of blood from the cavities. I feared haemorrhage of the meninges of the brain, and also pressure on the motor areas, but I found no indications of such occurrence, as all the functions of the extremities and body were unimpaired. Therefore, trephining for clots and pressure was unnecessary. He had a partial paralysis of the upper lip, due to severing of the fibres of the facial nerve, and there was also loss of motion on the right side of the tongue, which indicated injury to the right hypoglossal

nerve; loss of sight on the inner side of the left eye and the outer side of the right eye, which indicated an injury to the optic chiasm; loss of taste on the right half of tongue, due to injury of the corda tympani and glosso-pharyngeal nerves, and also an impairment of the sense of smell, caused by injury to the olfactory nerves.

I applied a temporary dressing. The next day I applied a plaster-cast to head and face. I visited him from day to day, and kept especial watch over the function of his limbs, etc. He was fed by means of a tube; he breathed with difficulty through the nose. I thereupon introduced a dental wax-cast into the nostrils, with holes to admit air freely, and also applied a cast for fractured nasal bones.

After leaving the cast on his head and face for some two weeks or more, it was removed, and there was firm union of the bones; he suffered slightly for some time with a partial facial paralysis, but motility was restored by the use of electricity. He entirely recovered with the exception of the full sense of smell. It is now five years since the accident, and he is well and back in his old position.

W. N. B., age 17, brakeman O. & W.—Had his forearm caught between the deadblocks, caused by shifting engine slacking up. He was removed to St. Elizabeth's Hospital. The patient was anaesthetised and an incision was made on the flexor side of his arm near the elbow, for the purpose of removing the flexor muscles, which were completely crushed and protruded through many openings in the integument. The question that presented itself was, "Shall we amputate?" and the answer from a number present was, "Yes." Then others said "No." If we do not amputate, will the limb be a useful one? Owing to the age of the patient, only 17, although he looked like a man of 22, it was decided to wait and dress the wounds carefully. All loose muscles were dissected out. The arm was packed with iodoform gauze, and supported. The next day I removed the packing and found that his arm was doing very well. I used the irrigation treatment daily, and after two weeks he left the hospital. I dressed the wound at my office thereafter until granulations closed the wound.

We had considerable difficulty in preventing ankylosis of the wrist and fingers, but by passive motion he has entirely recovered the use of the hand, excepting that portion of his fingers operated by the flexor profundus digitorum muscle, which prevents his flexing the distal upon the middle phalanx.

A number of years ago, S., a night watchman on the N. Y. C. & H. R. R. R., was assaulted by two thieves, who struck him on the head with a hatchet. The patient was placed in an express-wagon and taken to his residence. On examination, three hours later, I found two depressed fractures of the skull. There was a "V" shaped cut on the head above the ear. One of the fractures of the skull was oval shaped in outline and nearly as large as a silver dollar; the other corresponded somewhat to the shape of the head of the hatchet. The wound on the side of the head had the appearance of having been made with a downward blow of the hammer, the upper rim of the hammer striking the skull first. He was semi-conscious and his condition very critical; but little hopes of his recovery could be reasonably entertained.

I decided to trephine and relieve the pressure from the brain. He was lying in a poorly lighted room, and I had no medical assistance, but I determined to do it alone, and proceeded by making a large horseshoe shaped flap and turning it back, removing a number of pieces of bone and elevating the remainder of the depression. I also removed at least a teacupful of brain matter, irrigated the cavity, and packed it with sterile gauze.

Shortly afterwards he regained consciousness. I visited him the day after, and irrigated the cavities with normal salt-solution and redressed with sterilised gauze from time to time until his complete recovery, some seven or eight weeks later.

On October 21, 1893, J. D., a brakeman on the N. Y., O. & W. R. R., was injured in New Hartford by falling from a car. He was brought to St. Elizabeth's Hospital. I found that he had received a scalp-wound six inches long and a compound multiple fracture of the right leg. The injury involved the entire length of the tibia and fibula, and included the astragalus and os calcis; he had also a crushed toe on the opposite foot. The patient was anaesthetised, and I sutured the scalp and amputated the toe. It was a very serious question in regard to the leg; it looked as though amputation was the only proceeding practicable, and it was a question in my mind if the limb could be saved. If it was saved I feared it would be useless.

After due consideration, I decided to reduce the fractures, which I did, and applied a gypsum-cast to the leg and foot. He began to improve rapidly after a few days, and very encouraging results followed the treatment. In three weeks the cast was removed, and he was allowed to walk about with the aid of a cane. The bones had entirely united, and he had a good and useful limb.

At first there was considerable ankylosis at the ankle-joint, but this was overcome by passive motion. The last I heard of my patient was that he was back on the road as fireman.

May 21, 1895, I saw W. D., a bell-boy at the "Butterfield House," whose arm was injured by the elevator. I found the young man in great pain, and I proceeded to examine him and at the same time learn the cause of the injury. He was in the elevator, and intended descending, so he raised the cable and at the same time closed the door of the entrance, but his fingers became entangled in the screen and he was unable to extricate them. During this time the elevator was descending, and passed from under him, leaving him hanging by the hand and arm, which were now caught between the top of elevator and the floor of the building, with the whole weight of the elevator resting on the arm. He was suffering from a large lacerated wound, which extended from the top of the shoulder into the axilla and along under the surface of the arm to the elbow. The muscles and blood vessels were badly lacerated, and there was profuse haemorrhage. At first appearance I feared that the brachial plexus of nerves had been severed, but on closer examination I found them intact.

He was removed to Faxon Hospital, and the wounds were sutured as far as it was possible to approximate the edges. This of course left many large ulcers and I feared that I would be obliged to do skin-grafting. After some few days, I found that the wound was doing well. I irrigated with normal salt-solution for the purpose of stimulating the granulations. The patient was discharged from the hospital, and called at my office for a few weeks until the ulcers entirely healed. He returned to his old position, with as useful an arm as before.

B. A., age 23, an employé of the D., L. & W., while returning from his work, was struck in the back by a coal-train and thrown between the two tracks, where four cars passed over him. He was removed to the railroad shops. I found his back severely lacerated, and his right heel badly crushed, the tissues being entirely denuded.

The case appeared to demand amputation, but I found the periosteum intact, and concluded to try to save it. After thorough disinfection with bichloride solution, I enveloped the tissues in iodoform gauze. After a few days granulation began, and a new heel virtually "grew out." By wearing a small pad in his shoe he is now able to perform his work and walk as well as ever.

July 27, 1887, I was called to attend J. D. F., a brakeman on the N. Y., O. & W. R. R., who was injured at Hamilton, N. Y., his pelvis being caught between two cars. He was brought to Utica on an engine. When admitted to the hospital he was suffering from profound shock. After administering stimulants, I examined his injuries, and found a dislocated hip and a comminuted fracture of the fourth and fifth lumbar vertebrae. Under anaesthesia, I reduced the dislocation of the hip; I then applied a gypsum-cast, which kept the fragments of the vertebrae quiet and also held the pelvic bones in place. He reacted a few hours after the operation and made an uninterrupted recovery, and is perfectly well to-day without deformity.

The summary referred to consists of the following:

Part crushed.	No. of cases.	Amputated.
Finger	566	112
Thumb	38	14
Hand	98	22
Forearm	4	1
Arm	42	14
Shoulder	14	..
Head	30	Trephined 5
Leg	24	12
Foot	20	6
Toes	42	10
Spine	4	..
Pelvis	5	..
Total number of crushes	887	Total amputations 191

ON THE TEACHING OF PHYSIOLOGY AND HYGIENE IN PUBLIC SCHOOLS.

By FRANK OVERTON, A. M., M. D., of Suffolk County.

October 18, 1898.

Man is a living machine, composed of mind and body. The machine itself and its adaptation to its environments was as perfect four thousand years ago in the childhood of the race as it now is in a new-born babe; for the Creator perfected the first man only after an experience of thousands of years with lower forms of life. To-day science can suggest no improvement on the living organism.

It is seldom that a human machine is faulty when produced; but only a few know how to engineer their bodies so as to develop their full power. Ever since men have dwelt together some have claimed to possess special knowledge and skill as engineers of the bodies of other people; but the best of them, up to a few generations ago, were only blind leaders of the blind. While they toiled faithfully and conscientiously with exorcisms and potions and lance, grim Death laughed at their misdirected efforts. The trouble was that they did not give heed to the evident structure and design of the human machine. In fact, they did not recognise that it was a machine at all. To their minds the body was simply an abode of the soul, and on that account was the special target of spirits, both good and bad. At their whim or pleasure the enemies of the soul assailed the organism with planets and conjunctions, demons and spirits, humours and exhalations, in the attempt to overthrow the kingly soul. The engineer whose imagination could detect the most devils or humours washed out from a bleeding vein, or whose

ingenuity could concoct the vilest mixture to displace the evil spirits, was considered to be the most learned in the secrets of the body.

The old-time physiology still has a firm hold on the popular mind. It is handed down by tradition, and is confirmed by the health hints in the current press. Tons of medicinal herbs are still gathered during the old moon of August; thousands shut themselves in hermetically-sealed bedrooms for fear of poisonous exhalations in the night-air. Nearly everybody believes that a pain is the evidence of a "cold" or humour, which settles in one spot for a time and finally goes out by a finger or a toe. Nearly every family takes a blood purifier in the spring, and large numbers, especially of the learned class, are duped by the logical but unfounded claims of liver-pads, electric belts, and the electropoise.

All scientific matters of common knowledge were once in the possession of a learned few, but after the lapse of a generation they filter through the entire community and are taught to little children at school. At least a generation has elapsed since modern physiology and medicine developed into a science as exact as that of bridge-building.

Men have a natural curiosity to investigate the workings of machines, but their superstitions breed an instinctive abhorrence of the sight and description of the organs of their own bodies. The result is that few men, even among the learned, know enough about the workings of their own bodies to distinguish the explanations of a scientific physician from the boastings of a plausible quack. This is true, notwithstanding the fact that for the past fifteen years New York and most other states have faithfully kept laws compelling the study of physiology in every public school. Since physiology is taught, let us have it so taught that, if the student becomes a patient, he can intelligently follow the explanations and directions of his physician. Does it not seem strange that medicine should be the science which is the least known and appreciated in the community? Do not both the physicians and the community suffer for it?

What, then, should be the basis of teaching physiology in our public schools?

In the first place, the subjects should be practical. Details of bony structures, or the exact muscles affected by various kinds of exercise, or the refinements of bathing, had better give place to the means of stopping haemorrhage, the effects of adenoids and enlarged tonsils, and the connection between the throat and ear trouble. Technical names memorised do not make up a practical knowledge of physiology. One boy, in answer to the regent's question, "Name three digestive fluids and the action of each," wrote: "The saliva digests bread; the chyme digests butter; and the chyle digests pork." He had wasted his energy in learning technical terms, but gained no idea of their meaning.

In the second place, physiology should be studied from the standpoint of the microscopic workers or cells. The simplest animals and plants are single indivisible cells. Man's body is complex, and is made up of millions of simple cells which have been highly trained along special lines; and yet in their size and form and in their nutrition, respiration, and mode of reproduction, they retain the characteristics of the lowest forms of life. Physiology is essentially the study of a typical cell from each of the half dozen different groups of tissues in the body. The cells form a key to the whole science, and make plain what men a generation ago only surmised.

In the third place, the pupils should be taught that physiology is mechanics and chemistry applied to the living body. The physician thinks of a man as a complex machine. His thoughts also are the manifestation of certain physical and chemical actions which require the expenditure of the same kind of force as lifting a weight. An incapable man will make a dismal failure of running a most excellent body-machine, while another, with a frail and broken-down body, will accomplish the work of ten men. The same laws apply to both bodies, but one man does not heed them and the other does. One uses, probably, 10 per cent. of his available strength; the other uses 100 per cent. of his. Chemistry

and mechanics explain the difference between them as easily and as clearly as though two steam-engines were compared.

In the fourth place, the source of the heat and energy which runs the body should be explained. This embodies tracing the food from the mouth, through digestion and absorption, until it reaches the cells and is there burned or oxidised as if in the boiler of an engine. This subject is eminently practical. A steady fire, with perfect combustion, means a well-running body. Interference with eating, breathing, or exercise deranges the fuel, the draft, and the ashes. The engine of the body soon shows the derangement in its impaired utility.

In the fifth place, the pupils should actually see the working parts of the body, and their physical and chemical action. A rat or a frog will form a good subject for demonstration. A frog's heart, beating after the death of the animal, and the flow of blood through the capillaries in the web of its foot, will give truer ideas of the circulation than pages of description. The anti-vivisection furore would receive its quietus if pupils in public schools were to see the right kind of demonstrations. If the teacher always etherises the animal before the demonstration and handles it with tenderness, the pupils get an object-lesson, not of barbarity and cruelty, but of kindness and gentleness. Instead of becoming like brutes, they will recognise a claim of kinship on the part of the animal as they see the homology between its organs and those of man.

The working parts of the organs are microscopic, and so are unknown and incomprehensible to pupils unless they actually see them. Every village school is compelled by law to possess a compound microscope; yet few teachers know how to use one. A physician is often the only available person who can show them its action.

These points seem commonplace and self-evident to us physicians, but they are unknown to the majority of teachers. What, then, must be the state of mind of the mass of the community? Is it any wonder that quacks still feed on the

gullibility of men, when a majority of even the educated do not know the workings of their own body-machines?

In addition to these five positive points of teaching physiology, a word must be said on the negative side, or how not to teach it. The study is one-sided and incomplete if the only object is its application to one form of intemperance, as is evidently the intent of the compulsory law. It is arbitrary, to say the least, to choose a single form of bodily abuse and make that the centre of all physiological teaching. However, it has this good effect,—it compels all teachers to unite on one subject to which a full detailed application of physiological principles shall be made; then, with this as a type, other abuses and applications may be better understood and discussed.

In the study of physiology as above outlined, what would be the benefit to the community? It will not change the disposition and habits of men, or frighten them into living in a thoroughly hygienic manner. It will tend to remove morbid sensitiveness and fear of everything pertaining to the inside of the body. It will aid in rendering popular a practical study which is now feared by the majority of people. It will lead men to detect the charlatans who profess to cure by suggestion and quackery. It will teach the nature of contagious and infectious diseases, and do away with the insane fear which an epidemic often inspires. It will lead to a more hearty coöperation with the physician, and to a greater appreciation of his true worth.

As man understands the complex and delicate nature of the body-machine with which he deals, the physician will not be compelled to devote the main part of his thoughts to framing an explanation and advice which will satisfy the peculiar beliefs of his patient. The millenium will be near when he can tell his patient the truth and find it received with the respect and confidence which comes from knowledge.

DISCUSSION.

DR. DELANCEY ROCHESTER, of Erie county, commended the paper, saying that physiology properly taught in the schools would be instructive as a means of keeping the body in good health and of preventing epidemics of infectious diseases.

About eight years ago he had been consulted by a young man in the last year of a high school course. He had contracted syphilis a short time before, and, being ignorant of such matters, had waited four weeks before seeking medical advice. He then went to a quack. As a result, he became thoroughly syphilised and lost the hearing in one ear.

The proper teaching of physiology in the schools would show the pupils the dangers of certain contagious diseases and the risks of indiscriminate cohabitation. When one thinks of the danger to womankind from a disease usually spoken of as "only clap," one should feel impressed with the need of more thorough and practical training for the young people.

It would be possible, by reference to the lessons of botany, to show the relation of the sexes, without touching upon anything prurient. Nor would it be at all out of place to explain to the pupils how infectious diseases can be avoided. Great advantage would accrue to the human race from imparting to the young a thorough knowledge of physiology in all its branches.

DR. OVERTON said that some of the very subjects which should be taught in our schools, and which had been touched upon by the last speaker, were rigidly excluded by school boards and by publishers of school books. Some of the latter appreciate the necessity for such teaching, but assert that they can do nothing in this respect because of popular prejudice.

DR. E. E. HOLT, of Portland, Me., said that physicians were expected to know all about the eye, yet, as a matter of fact, it was quite rare to find physicians who knew, or put to practical use, the simple rules governing the care of the eyes. Thus, it was the rule rather than the exception, for even physicians while reading to entirely disregard the direction from which the light comes.

A METHOD OF AMPUTATION AT THE KNEE-JOINT IN GANGRENE OF THE TOES AND FOOT.

By STEPHEN SMITH, M. D., of New York County.

October 18, 1898.

The person upon whom this operation was performed was a man, aged 78, a labourer much addicted to the use of whiskey. He had been suffering upwards of a month from gangrene of the great toe of the right foot. He was greatly emaciated and had no appetite, was extremely feeble, and complained of the pain in his toe which prevented sleep. On examination, his arteries were everywhere rigid with calcification and the pulsations of the heart were very feeble and intermittent. The urine was of low specific gravity and a small amount of albumen was found, but there was no evidence of sugar. The toe was black to the second joint and dry, but there was some swelling of the foot and dusky spots were noticed on the dorsum and on the leg above the ankle. The capillary circulation was very feeble, as appeared on pressure at different points of the leg.

In his enfeebled condition, the only treatment possible must be directed to relieve his sufferings from pain in the affected toe, and to nourish him with the most digestible foods. To meet the first indication, he was ordered the opium and soap pill, one grain of each in a pill, and one pill to be given three times daily. His diet was to be as much peptonised milk as he could be induced to take, and two ounces of whiskey every six hours. As tonics, he took 1-60 of a grain of strychnine three times daily and half an ounce of tr. cinchonae comp. before each meal. Hot irrigations of weak solutions of carbolic acid were employed at intervals, and at other times cloths wet with a solution of the same material were applied. He soon began to show signs of marked improvement. With the abatement of pain he slept much of the time, while the whiskey and milk agreed perfectly with his previous habits of dieting. The gangrene slowly extended, the margins being moist while the extremity was black and mummified. The heart's action improved,

the pulse becoming full and regular. He was anxious to have more radical measures employed and was willing to submit to amputation provided he was liberally supplied with stimulants. The propriety of operating began now to be seriously discussed, and the question of interest was the point of election.

Surgeons have in these latter days been inclined to select the knee-joint or some point in the lower part of the thigh as the safer place of amputation in these cases, and by some this election is regarded as a departure from the rule governing the older surgeons. It is true that the surgeons of half a century ago recognised the importance of operating at a distance from the seat of the disease, and often selected a point between the ankle and the knee-joint. It is also true that many American surgeons advocated amputating at or above the knee-joint. Pitney of Auburn, New York, advocated amputation above the knee-joint, in senile gangrene of the toes, as early as 1837. Mott was accustomed to advise, and frequently practised, amputation above the knee in these cases. Parker, of New York, also gave careful instruction in his lectures as to the selection of a point above the knee for amputation in dry gangrene of the foot. More recently, Mr. Jonathan Hutchinson of London published a paper read before the Medico-Chirurgical Society, in which he advocated amputation above the knee in gangrene of the foot, and reported several cases. He gives the credit of definitely proposing the operation to James, of Exeter, but it had frequently been performed before that date, both in this country and on the continent. Recently the operation above the knee has attracted attention in Europe, and Kruger, Heidenham, and others have reported favourably upon it. In this country Powers of Denver, has advocated the so-called high operation for gangrene of the toes in an interesting paper recently published.

Those writers who have given their reasons for preferring the high operation, allege that it is impossible to determine at what point the obstruction of the artery exists and as the operation must be above the obstruction it is better, as a

matter of safety, to be sure of healthy and well-nourished flaps by amputation far above the limits of gangrene. In my case, the condition of the arteries throughout the leg were most unfavourable for amputation at any point for the capillary circulation was everywhere greatly impeded. The question was, therefore, if amputation must be performed, where, under the circumstances, can flaps be secured having an adequate blood-supply to prevent mortification? It was apparent that amputation above the knee, or at the knee, by any previous method would not meet the indications, for in each of these operations the arteries supplying the flaps are divided near their origins. The procedure in this case was based on the following considerations: The structures covering the knee are more largely and directly supplied by arterial blood than those at any other point of the limb. The arteries distributed to the knee are eight in number, viz., four articular, the anastomotica magna, the recurrent anterior tibial, and the azygos. To these may be added the sural. If an amputation at the knee-joint could be so performed as to save all these arteries, the flaps would have a large and perhaps adequate supply of arterial blood at their origins. On reflection, the following method of procedure was decided upon, and adopted:

A straight incision was made, commencing two inches above the upper border of the patella downward over the center of that bone to the tuberosity of the tibia; from the lower extremity of this incision were made two curved incisions, the convexity of each being downward, one toward the external border and the other toward the internal border of the leg; these two incisions were then joined posteriorly by a straight incision across the upper border of the calf. These two flaps were dissected from the tibia and fibula, the patella was removed and disarticulation effected. As the arteries were very brittle, the Esmarch bandage could not be used safely, and the circulation was controlled by gentle pressure with the fingers on a compress placed over the femoral in its first part.

The precautions to be taken are these: the lateral incisions from the lower extremity of the perpendicular incision

should curve well downward,—the internal to secure an ample flap for the long internal condyle of the femur and the external to include the recurrent tibial artery.

The patient was prepared for the operation by giving him one ounce of whiskey in four ounces of hot milk every two hours, commencing at eight o'clock of the day of the operation. He was taking 1-60 grain of strychnine every six hours. At three o'clock of that day his pulse was 96 per minute, regular, full, and slow; his respirations, 22 per minute; his mind undisturbed, and he expressed gratification that the operation was to be performed. He required but little ether, and passed through the operation without a struggle, the pulse remaining at 96 and respirations at 22 per minute. Primary union of flaps followed without an appearance of pus. It was noticeable that on removal of pressure from the artery at the groin, the flaps assumed a pink colour, showing that the capillary circulation was fully and immediately restored.

In due time the patient was supplied with an artificial limb, which took bearing directly upon the extremity of the stump, and he walked with scarcely a limp, using only a cane.

The advantages of this operation will be recognised on referring to the anatomy of the parts, and may be briefly stated as follows: The straight incision on the anterior part of the knee and the joint divides only the terminal extremities of the arteries, thus preserving to the flaps the full amount of the blood which they normally receive. In the other approved methods of amputating at the knee-joint, the dissection involves the division of two or more of the articular arteries at their origins by the straight incision on the posterior part of the leg or in the ham. Though the recurrent tibial is ligated at its origin, yet its anastomosis with the articular arteries is preserved, and thus the capillary circulation is well maintained at the extremity of the flaps.

DISCUSSION.

DR. J. W. S. GOULEY, of New York county, said that the method was an admirable one, yet he felt that the case just reported was a very fortunate one in that these arteries were all pervious. He recalled having once amputated under such circumstances, and

having been surprised at the lack of haemorrhage. This was ascribed at the time to the very thorough application of the tourniquet, but a few days later the flaps sloughed, and the patient died within a week. On dissecting the stump, not only was the popliteal artery found to be plugged, but the clot extended up to the upper third of the femoral artery. These cases of senile gangrene are very apt to present just such a condition. There were, of course, exceptions, and the one just reported had proved to be such an exception. It should be remembered that Esmarch's bandage is contra-indicated in cases of senile gangrene.

DR. ISRAEL CLEAVER, of Reading, Pa., asked what method had been used by Dr. Smith in arresting the flow from the femoral artery.

DR. SMITH replied that as the arteries were in such a condition that they would not bear any considerable pressure, it had been thought improper to apply an Esmarch bandage, and hence the artery had been controlled by pressure with the thumb on a pad placed on the artery so as to bruise the vessel as little as possible.

DR. M. C. O'BRIEN, of New York county, said that he had performed an amputation for gangrene at the Charity Hospital in 1882, on a patient seventy-four years of age. At that time, the Esmarch bandage was used universally in all amputations at that hospital. The patient lived for twelve days after the operation, and was then found dead in bed in the early morning. On post-mortem examination of the arteries it was found that from the point at which the Esmarch bandage had been applied to the extremity of the popliteal artery there was one continuous clot. The artery at the point where the bandage pressed was broken and its caliber obliterated. It was also found that all the other arteries were completely plugged for a distance of from one to three inches, and that the right heart was filled with a firm clot. Only at the extremities of the flap on the under side had there been any attempt at repair. Had the patient lived a little longer, gangrene would undoubtedly have recurred. The amputation was performed just below the knee, and every effort was made to conserve the blood supply. The loss of this patient was very largely attributable to the use of the Esmarch bandage, as the internal organs were in fairly good condition, the patient having worked as a 'longshoreman until two months before the operation. The vessels in the other limb, as far as could be followed, contained fluid blood eight hours after death.

SUBNORMAL TEMPERATURE.

By LEROY J. BROOKS, M. D., of Chenango County.

October 18, 1898.

So little is said, in a collective way, concerning sub-normal temperature, that one may be forgiven if in such a study he repeats many well-known facts, in order to more satisfactorily analyze the conditions in which it exists.

Flint states that the subnormal temperature is exceedingly rare and except in extreme variations of less consequence than the supranormal. Vierodt tells us that a continued subnormal, that is, continued for several weeks, is very rare, and Starr (*Diseases of Children*) that a temperature of 97° in children continued for several weeks is a very serious condition, whatever its cause. My own observations lead me to think that it exists more often than we suspect and doubtless from the fact that clinicians devote but little attention to temperature disturbances unless they are above the average normal.

We imply that if there are no manifestations of fever further observations are unnecessary.

I am impressed with the fact that we overlook in this neglect important early indications of disease.

A single temperature register taken at intervals of twelve or twenty-four hours is rarely a good index. As a matter of diagnosis of diseases, not of themselves febrile, as great an amount of knowledge can be gained by following the temperature curve, at short intervals, for about twenty days as we get from examinations of urine taken separately from each quantity voided.

Another point worthy of suggesting is the difference between fever and pyrexia. It is the distinction between heat and temperature. There may be pyrexia without fever.

The body heat is the form of energy produced in and lost from the body, and is estimated by the calorimeter. The body temperature is the relationship between production of heat and loss of heat, and is estimated by the thermometer.

Again, a temperature may be normal for health, yet subnormal for disease. A disease in which the temperature is normally (if we can speak of normal subnormality) that of fever and in which the body heat is produced in excess, through an unbalance in thermotaxis may be eliminated in excess, and make the external temperature subnormal. I imagine that something of this kind occurs in yellow fever and in cholera and perhaps in acute atrophy of the liver, the combination being far more rapidly destructive and exhausting than either heat production or heat elimination alone.

Fever, in our common acceptance of the term, is a condition due to a specific infection unless we except the temperature variations from structural changes in the nerve-centres. It is characterised by a train of symptoms such as exhaustion, emaciation, disturbed functions, pain, mental unbalance, temperature acting only a single part.

The specific causative toxæmic results may produce either an elevation or a depression of temperature, and the latter generally indicates a greater intensity of the poison.

An afebrile pneumonia is more disastrous than the febrile. A diphtheria with or without extensive exudation, with rapid gland invasion, is often characterised by a subnormal temperature and is notoriously fatal. A "typhoid condition" as we term it, without the typical typhoid temperature is more serious than its prototype. The "malignant" cases of appendicitis with subnormal temperatures are the unresisting, overwhelming, gangrenous ones that never recover. What we ordinarily fail to fully measure is, that morbid temperature is a creation of impressions upon a specific nerve centre by toxins and that the peculiar power of one may be reversed or modified in its combinations with others, and that the strength of the union produces unexpected results.

I have questioned whether we might not get more valuable

suggestions from some other method than the usual one in obtaining the internal body temperature. The rectum approaches accuracy more closely than under the tongue but is yet so frequently influenced by local conditions that we are liable to be deceived. This was manifested in an observation that gave the temperature under the tongue at 98.7° and in the rectum at 101.5° . A local rectal congestion explained the differences. To consider the question systematically let me classify it in a somewhat arbitrary manner, yet sufficient for the purpose.

1. Subnormal temperatures as normal for the individual.
2. As a prodrome.
3. During the progress of disease.
4. As a sequel.

My friend, Dr. Phelps, reports a case of a fellow-student whose temperature was habitually 97° under the tongue. He states that he was apparently vigorous, active, and capable of as much work as other students. He possessed a healthy colour and felt himself to be in perfect health. Dr. Phelps knows nothing of the history of this man for the past three years, and I doubt if he still retains his full vigour for as a continuous increase indicates serious functional or organic changes, so a continuous decrease will result the same.

We recognise the normal physiological variations of $.2^{\circ}$ to $.3^{\circ}$.

The second class seem to me to possess exceptional importance because the temperature depressions not only present indications of subsequent developments but suggestions for treatment that may prove abortive of serious conditions if correctly interpreted.

Mrs. D., aged 39, well nourished and as fine a specimen of physical development in a woman as could be found, weighing 160 pounds and 5 feet 10 inches tall, came to my office in 1894 with the complaint that while eating and sleeping normally, with no unusual care or responsibility and no recognisable disease she had been constantly languid for some weeks. This was contrary to her usual feeling, possessing ordinarily rather unusual physical activity,

vigour, and executive ability. I examined her carefully and was forced to declare that I could not find the slightest disease. The heart was perhaps small for her size, but sound lungs, perfect digestion, normal menses, normal pelvic organs free from evidences of disease or injury; urine abundant, elimination sufficient, constituents normal. The family history showed several cases of insanity. I prescribed strychnia and rest and awaited developments. I saw her again a few weeks later. She had taken to the bed and complained of extreme lassitude but was placid, intelligent, and with every function perfectly carried on. The heart's action was not strong but regular. Surface was cool, slightly congested but not livid, and the temperature under the tongue registered 96.8° . She had absolutely lost her interest in her household affairs and ignored them under the impression that in her previous activity she had exhausted her nerve-force and was paying the legitimate penalty to nature. I ordered complete mental and physical rest, systematic feeding and massage, and more generous doses of the strychnia. After a few weeks of such treatment she gradually improved, the average temperature reached 98° to 98.5° and she resumed her usual responsibilities. She removed to Norwich soon and I did not see her again until 1896 when I was called to the southern part of the state to see her in consultation. She presented a repetition of the earlier history except that the surface had a passive capillary congestion; the heart's action was weak and irregular without organic lesion, and the pulse was correspondingly weak. The functions of respiration and digestion were perfectly performed. The temperature was at 96.5° and not exceeding 97° at any time in a given twenty-four hours. Her mental condition had undergone a decided change. She was suspicious, apprehensive, emotional, apprehensive of impending death, and had a marked suicidal tendency. The physical conditions were like those of a vasomotor paralysis. I suggested again strychnia and phosphorus, special feeding and light massage, and in a few weeks she recovered and with the recovery the temperature became normal. She remained well about a year. I was called again in the latter part of 1897, to find a repetition of the same history, and the same processes brought a gradual recovery. In January, 1898, her husband came to me with a statement that he had discovered that her temperature was again subnormal and that he could see indications of increasing lassitude. The strychnia was given, and evidently checked the advance and averted the attack.

Now, in this family was a history of seven suicides. I was familiar with two of the cases, both of whom were committed to asylums, and all of them hung themselves. I do not insist that the mental condition of my patient was the result of the depressed temperature, but suggest that the subnormal temperature preceded the other manifestations sufficiently to give an early and definite warning, and that its recognition and proper treatment would prevent the more serious attack. The following case is an anomaly because of the variations of temperature without discernible causes. I have been the patient's attendant for the past ten or more years and have had many occasions to be assured that before the present disturbance her average temperature was nominally 98.5°.

She is from a family without hereditary taint except a remote tuberculosis. Small in stature; age, thirty years, weighing 95 to 100 pounds, 4 feet 6 inches in height, exceedingly active mentally and physically, intuitive and nervous, but never manifested hysteria. She has now three children, with ages respectively five years, three years, and six months. Her confinements are normal and without sequelae. She nursed her first child eight months; the second, about four months, and did not nurse the third. In 1895, a few months after the birth of her second child, she began complaining of exhaustion, and we found the temperature from early morning until 2 or 3 p. m. did not exceed 97°, and much of the time varied from 95° to 97°. It then began to gradually increase until in the evening it reached from 95° to 101°. We instituted a careful search for the cause. Her bodily weight varied but little; appetite was good; the lungs, heart, abdomen, and pelvic organs were perfectly healthy. The urine was frequently analysed and the proportion of solids estimated with negative results. We searched for evidences of malaria and examined the blood without finding evidence of malarial infection. Sanitary surroundings were perfect. This condition continued month after month without change in symptoms except a mental depression during the hours of the low temperature, until the early part of 1897. I referred her to Dr. Janeway, who after his usual exhaustive search failed to find a sufficient cause beyond a theory of some central irritation, and wrote me that he had under his care a professional gentleman who had presented for three years a

similar history, which he could not account for. He suggested treatment for a possible malaria which availed nothing. Dr. Herter also saw her without any more definite conclusion. Dr. Ford of Utica was consulted and suggested a possible autotoxis and thought he could detect some variation of the respiratory sound in a small section of the right lung. A most exhaustive search for a source of toxæmia failed to reveal anything and there had been no advance of pulmonary disease, and the respiratory change was evidently due to a temporary bronchial catarrh. She became pregnant the last time in 1897. After the beginning of her pregnancy, the temperature became normal, she was relieved from the lassitude, gained several pounds in flesh, and regained her natural brightness. This continued until the eighth month, when she became nervous and apprehensive about her approaching accouchement, which was contrary to her usual reception of that event, making her household arrangements for her death, planning her own and her children's clothing for that event, and was irritable, depressed, and emotional. I found her temperature again from 96.5° to 97° , continuing so during the full twenty-four hours. There was not a sign of uræmia or the other complications of pregnancy. She passed through her confinement easily and quickly without complication except a little excess of flowing. Within an hour after its completion she passed into a condition of lethargy, was utterly indifferent to surroundings, paid no attention to the child, talked incoherently, or if aroused was exceedingly depressed and apprehensive. She remained in this condition a week, the temperature never exceeding 98° and generally nearer 97° . She rallied slowly and up to the present time, while able to be about and perform her household duties, still has the temperature variations of a depressed morning and an elevated afternoon, and possesses the mental depression, irritability, and constant sense of weariness.

One condition existed in these two cases in common—*hearts normal in structure, but weak in force for the demand upon them.*

My friend, Dr. Williams of Greene, N. Y., has been for two or three years investigating cardiac areas and believes that in nearly all cases of laziness or chronic weariness without disease, he has found a marked relative disproportion between the size of the heart and the body. The heart is too small for its work and the "fellow can't help it."

We are doubtless all familiar with the picture so graphically drawn by Hammond twenty-five years ago of the influence of excess of mental toil upon the cerebral circulation,—the undue distension of the vessels, the subsequent reaction and passive congestion, and the ultimate nerve-weakening, functional irregularity, inability for mental application, delusions, etc., later described as neurasthenia. A small heart or a weak heart too small for its requirements can easily produce the same results. The defective pump, sluggish circulation in the terminal arteries, insufficient blood-supply to nerve-centres, irregular thermogenesis or thermotaxis, depressed temperature, mental depression, melancholia, suicide, produce a familiar picture. The overworked business man often presents a record as follows: After perhaps an unusual business strain, he becomes weary, listless, nervous, irritable, despondent, sleepless, unable to apply himself, and with a lack of judgment in his business affairs. These cases frequently present a subnormal temperature varying from one half to two degrees for days preceding the giving out.

EXTRACTS FROM A PAPER BY DR. GREENE BEFORE ALLUDED TO.

W. L. S., age 60, good habits and in excellent health for a man of his age. Has large business interests to which he has devoted himself assiduously. He came to my office with a complaint of general nervous distress, which he could not define clearly. An observation of his temperature gave it at 97°. His business at this time was in a crisis which taxed him to the utmost. I advised rest but he could not take it. In ten days I was called to his home to find his condition so much like that just described, that I need not repeat it. A month's rest, and he returned to business with vigour and ability restored and temperature normal. He has repeated this history several times during my knowledge of him, each time with the premonitory subnormal temperature followed by insomnia, nervousness, etc., until a complete rest restored him. I suspect a time will come when with unequal recuperative powers his mental powers will be permanently enfeebled.

Report by Dr. Williams :

O. M., merchant, 58, good physique and a tremendous worker. He has periodical "going out times" as he describes them and the history of the preceding case is repeated. His temperature for days registers 96° to 98° . Absolute rest in bed, freedom from all business cares, and strychnia restore the exhausted forces and in two or three weeks he returns to his business.

These cases justify me in the belief that the fall of temperature is the earlier manifestation of the condition, and that if this is recognised and appropriate measures resorted to, the latter disease may be averted.

Periodical alcoholics present a depression of temperature for a period of from one to five days preceding the outbreak of extravagant indulgence. As a matter of fact, it is a consciousness of physical subnormality that induces the resort to stimulants. Alcoholic excesses, especially in the solitary drinker, seem to be a sequence, the result of an attempt by artificial means to re-establish a normal bodily balance.

An illustrative case is G. B., a man of 35, good physique, who has a periodical drunk at intervals of from four to six weeks and it does not seem to be associated with "pay-day" excesses. In the interval he abstains entirely. The period lasts a week or so, during which he drinks excessively. His complaint is, as the period approaches, "I do not know what to do with myself." The sense of uneasiness, of inability to apply himself to his work, to concentrate his thoughts, is almost overpowering, and if not averted leads to resort to the stimulants. His temperature for several days preceding his resorts to drink is 96.5° or 97° , and if then proper treatment is resorted to, the desire for stimulants passes off, the temperature becomes normal, and the storm is prevented.

Dr. Williams has recorded a number of cases of this class including observing the same temperature depression. Further observations that have led him to think there is a class of cases which presents the same periodical storms, resembling closely the alcoholic storm, and having exactly the same symptomatic history, but in which surroundings or normal qualities prevent the use of stimulants. He believes

that in the majority of such cases there is a history of some early violence or injury implicating the nerve-centers. He cites me the following cases, which I have condensed from his notes :

First, age 60, business man, has attacks at intervals of from two to six months, in which the temperature registers from 95° to 97° and with it is a physical condition that either partially or completely disables him from attending to his business. He is despondent, weary, irritable, etc., and during the attack has a dull, irregular pain along the spine. He had a fall from the barn-loft to the floor several years ago, injuring his head.

Second, age 45, capable, active farmer ; he fell from a tree at the age of ten, striking upon his head and shoulders. He has had for several years recurring waves of physical and mental depression, preceding and during which his temperature is about 95° .

Third, age 27, mechanic, fell from a high window during infancy. Gives a history similar to last patient, of low temperature and depression which occasionally results in alcoholic excess.

Fourth, age 46, farmer, ordinarily energetic, fell from a load of hay to the ground, striking on his neck and head. At intervals from six months to a year, he had attacks of exhaustion, with physical and mental depression without definite cause. This would last two to four weeks and preceding them by a few days and during the attack his rectal temperature does not exceed 95° and often at 94° . During the intervals the temperature is normal.

The subnormal temperature in the "progress of disease" is an interesting study worthy of a more prolonged and able consideration than I can give it.

In the text-books we find diseases characterised by constant or irregularly occurring subnormal temperature include the following : myxoedema, exophthalmic goitre, uraemia, chronic alcoholism, syphilis, chronic nephritis, constipation, influenza, diabetes, yellow fever, insolation, cholera, spinal sclerosis, melancholia, cerebral traumatism, surgical shock.

There are two distinct classes, and possibly a third : one that involves primarily the nerve-centers in organic changes such as syphilis, spinal sclerosis, and chronic alcoholism ; second, those that produce specific symptoms through the pro-

cess of acute intoxication as in uraemia, chronic nephritis, constipation, yellow fever, influenza, and chronic jaundice; and a *third* class that may have a measure of autotoxis combined with some specific influences upon the sympathetic or glandular systems, as myxoedema and exophthalmic goitre. It is probable that while various theories, not the object of this paper to discuss, exist concerning the origin of the two latter diseases, the essential element of the resulting cachexia in both is an autotoxaemia and that the diseases are closely allied.

Chervallier suggests that under the influence of certain pathological conditions the thyroid gland secretes a toxic matter, and this, by action directly on the nervous system, produces the secondary nervous phenomena in the patient. There seems to be a relation between the two. Myxoedema often follows an exophthalmic goitre. The heart is the seat of morbid phenomena in both. In Graves's disease there is a tachycardia; in myxoedema, slowness of heart's action, and attacks of exophthalmus are met with at the commencement of myxoedema. But whether the thyroid be a poison-eliminator or a poison-producer, the ultimate result is a toxic condition of the system. There are many cases reported of continuous subnormal temperature in myxoedema, the temperature continuing from one to three or four degrees below normal. As these have been published, I need not quote them. The temperature in exophthalmos is quite as often normal or elevated, but occasionally subnormal.

Just which toxines produce the subnormal, and which the supranormal, is difficult to determine. It is probable that the same toxines will produce opposite results in different conditions of the system, just as in uraemia, while urea remains unchanged we get a normal or supranormal temperature, when a decomposition takes place we get an ammonaemia, with a powerful temperature depression, or when the renal organs are irritated, a nephritis with tissue-necrosis and fever. A case just under my observation demonstrated this clearly. When the condition was discovered there was no

change from the normal, then followed several days of depression to 96° to 97° and then a crisis with convulsions, followed by a temperature ranging from 100° to 103° and as convalescence has progressed, a recurrence of the subnormal.

In carcinoma, particularly of the liver and stomach, there are many cases reported of long-continued subnormal temperatures.

Dr. Blair of McDonough reports to me a case of carcinoma of the stomach, in which for months the temperature did not exceed 97° and at times was 96° . Two months preceding death the temperature gradually increased to 101° and 102° . Here, doubtless, the combination of destruction, infection, and sepsis was the cause of the change.

The same may be said of the intestinal toxines, many of which produce a subnormal temperature, but when combined with foreign sources of infection, systemic poisoning, and structural changes act oppositely. The depressed temperature of cholera is doubtless the result of varied conditions, such as the specific poison, the excessive drain, and the rapid and destructive nephritis and tissue changes.

We occasionally find a case of diphtheria in which the poison rapidly overwhelms the system, and in which the temperature never reaches the normal. These are fatal from their inception, and the same may be said of the diffuse or rapidly spreading pneumonias due to influenza, that most of us have seen during the last five years. Death marks them as its own from the moment of the seizure. The latter cases of pneumonia are certainly more abundant than in former years and exceedingly fatal. Tessur reports a case of this character in which the highest temperature record was 97.4° . In February, 1895, there occurred three cases in one family, evidently due to infection from one another, characterised by temperature that (except in the later stage of one of them) did not exceed 99.5° . Many similar cases are on record.

The class that involves the nerve-centers primarily, such as spinal sclerosis, syphilis, chronic alcoholism, undoubtedly

depress the temperature by their direct effect upon the heat-producing or heat-regulating centers, aided by their influence on functional activity.

A class of cases, presenting periodical subnormal temperatures not commonly recognised, deserves a brief mention. Hemiplegics, after apparent recovery, are continually at short intervals, measured by weeks or even days, exhibiting depressed temperatures for several days at a time, and with this appears also a train of symptoms analogous to those described as occurring in alcoholics. These depressions are warnings that recovery is never complete, and that some degree of physical impairment has attended the lesion. Epileptics often present a temperature of 97° and 98° , and particularly preceding an attack it may be found at 95° to 96.5° .

I will mention one other class of cases, with a history of chronic or subacute rheumatism involving the joints irregularly, the thermometer indicating 96.8° F. or 97.6° F.

These phenomena are usually of short duration, lasting three or four days, and are subdued by guiac. The same condition has occasionally been observed in grown people, and is attributable either to intense cutaneous evaporation or the retention in the system of some toxic substance.

The last class occurring as sequelae of disease includes the subnormal temperature resulting from surgical shock, the depression following continued fever, and haemorrhage.

Cases of excessive venery are reported, in which, as a result, occurs prolonged subnormal temperature with the general depression of the nervous system.

Dr. Gibson of Utica states that he frequently found in examining, in the winter, pensioners, who would ride several miles in the cold, a subnormal temperature, lasting two or three hours. This result he attributed to heat abstraction.

In conclusion let me summarise :

First, subnormal temperature is not as uncommon as we are led to suppose by writers.

Second, the subnormal temperature is a frequent pro-

drome of disease and an important indication for abortive treatment.

Third, a continued subnormal temperature, whether cause or effect, is disastrous and especially to the nerve-centers.

Fourth, the subnormal temperature in diseases usually characterised by elevated temperature, is a very grave symptom.

Fifth, the causes producing a subnormal temperature can probably be covered by two pathological conditions: a primary disease or injury to nerve-centers, and an autoxaemia.

DISCUSSION.

DR. ROCHESTER met with a number of cases in which there was a persistent subnormal temperature, not only in the cases in which the heart is too small for the body, but in some in which the heart is too large for the body. He knew of two bicycle riders and two football players in whom a subnormal temperature had lasted for some months and had been especially marked during the period in which they were not exercising. In the cases in which the heart was too small for the body, it was probable that the chief cause was deficient circulation. A little more stress might well have been laid upon the poor capillary circulation present in these cases of subnormal temperature. Better results in treatment would follow from special attention to the capillary circulation by proper exercise and massage than from stimulating the myocardium by strychnine. In most of these cases the excretion of urine was below the normal, the bowels were sluggish, and the skin was particularly inactive. In these individuals there was usually a persistent lack of perspiration, although occasionally there was a cold perspiration. It should be remembered that the myocardium might be weak even with an enlarged heart, and that there might be deficient excretion even when the urine appeared to be normal. The use of phosphorus and iron, after microscopical examination of the blood, was an important adjuvant to the other treatment.

DR. OVERTON said that in his locality on Long Island it was common to meet with a class of cases diagnosed as "malaria." But with the sandy soil of that region there was almost no true

malaria. These patients have a dirty, coated tongue and a subnormal temperature, and they recover promptly under the administration of calomel and mineral acids. He had observed a subnormal temperature, associated with the condition formerly known as "biliousness," in the course of convalescence from many acute diseases.

DENTAL PATHOLOGY IN ITS RELATIONSHIP TO GENERAL HEALTH.

By DWIGHT L. HUBBARD, M. D., of New York County.

October 18, 1898.

Wishing to convey a proper idea of my intentions, I chose the above title. This paper would, perhaps, have been more in accordance with the title "Oral Pathology," etc. Diseases of the teeth alone have no small significance in their relation to general health. The studies of scientific dental men have proceeded so far beyond the mere consideration of the teeth, that there is much discussion as to whether it would not be better to change the word dentistry to stomatology, and for those who are prepared by the dental college teaching of to-day, to change the word "dentist" to the word "stomatologist." Oral pathology merits our careful consideration, and the sooner we recognize the value of the researches of such men as Black, Williams, Evans, Kingsley, Carr, and others of the dental profession, so much the sooner will we receive light upon a subject to-day left much in the dark, but upon which we may well turn the electricity of modern thought and research.

I have been led to a consideration of this subject more from a sense of duty than from a desire or wish to be entertaining, and I will frankly confess that I cared to bring it to the attention of this body of general medical men for the express purpose of pointing out to them the necessity for scientific research in this direction, and to call their attention to a neglected field. That which is everybody's business is nobody's business. We leave much of this to dental men and suppose that the rhinologist will take care of the parts overlooked. That ought to be the proper arrangement, but I

am sorry to be obliged to say that the mouth does not receive the amount of attention it deserves from even the rhinologist, who ought also to be a stomatologist. But first of all let us practise medicine. I shall never forget what a revered father always said (who, by the way, was an original member of this Association), when asked to what school he belonged: "I practise medicine," was his invariable reply. We, as medical men, neglect the mouth.

Dentists, up to the present time, have been totally unable to appreciate the general relationship of the pathology of the oral cavity to the general system, or the comprehensive application of the physiology of the first and most important act of the organs of digestion to the final assimilation of its products. The bridge is being broken down, and the education of the modern dentist is running the medical man a close race in the more minute pathology of oral diseases and the importance of their effects from the pharyngeal constrictors to the final assimilation of nutriment and the expulsion from the system of useless material.

It will be conceded by all that a normal condition of the mouth and of the mechanism of mastication is essential to good digestion.

What are the abnormal conditions? They may be cited under the head of abnormal states of the upper respiratory tract, including the mouth—catarrhal conditions in the head cavities, such as the frontal, sphenoidal, and maxillary sinuses and the ethmoidal cells. These are productive of gastric and intestinal disturbances. A catarrhal secretion from these will interfere with the normal preparation of food by the stomach as surely as water flows down hill. Observe the old-time and homely comparison. Catarrhal secretions always flow "down hill." The nasal plane, inclined backward from the anterior nares to the choana, is the receptacle for frontal, sphenoidal, and ethmoidal catarrhal secretions. The naso-pharynx receives it, and especially during sleep, carries it on to the constrictors, which pass it on to the stomach.

It is not necessary to dwell upon the deleterious effects of such semi-purulent and acid secretions as is evidenced by means of the microscope and litmus-paper. Purulent secretions having an acid reaction are not normal, and rebellion is the result. The very initial stage of digestion is interfered with, and the more remote results are manifest.

Couple with the catarrhal conditions above described the carious and pathogenic germ-carrying afflux from the teeth, and we have all the elements which may be productive of mal-assimilation and mal-nutrition through indigestion. As the result not only of carious conditions of the teeth but of diseased conditions of the whole oral cavity, different forms of micro-organisms are, as necessarily they must be, ingested. The various forms of yeast fungi, the *leptothrix buccalis*, the *oidium albicans*, and the *spirillum* of Muller, are found in this locality. The last is found particularly in carious teeth.

According to the general rule the process of cell-formation is a very rapid one. "Bacilli, whether rigid or flexible, motile or non-motile, have a very rapid development. According to Cohn, to complete the process of segmentation and for a new cell to attain the size of a parent cell, would require only one day to produce 16,000,000 cocci; at the end of two days 281,000,000 would be produced; while at the end of the third day the enormous number of 46,000,000,000,000 will have been reached." But such numbers are entirely beyond our comprehension. Suffice it to say that infection is dangerous from whatever locality it may come or from whatever cause it may arise. We have among the various forms of micro-organisms found in the buccal cavity, the *oidium lactis* (milk mold), the *leptothrix buccalis* and *gigantiae* and various forms of organisms found also in other parts of the body. It is not necessary to enumerate them. The effect upon digestion is the thing to be considered. The same acid medium which invited their presence is that which, in the upper alimentary canal, keeps them alive and active. They are not destroyed by the digestive juices, but are nourished

by this medium in which they multiply and thrive. Stomach and duodenal digestion thus interfered with is fruitful in the untoward results evidenced below. Assimilation cannot be perfect under these conditions. What are the results?

First, rebellion manifested by constipation with resultant flatulence. The constipation and flatulence so commonly seen is nearly always traceable to improper preparation of food by the sentinels of good digestion, viz., the teeth and buccal secretions. What is the remedy? Intestinal stimulants and ant-acids? Yes; when correction of primary causes is impossible. But the class of accepted remedies just named is an admission of the primary causes.

Second, too great an expenditure of vital nerve-force from the aforesaid rebellion, results in irritation of the intestinal mucous coats, and diarrhoea is the result. Such, in a general way, is the history of disturbed digestion. It is not a "tempest in a teapot," but a reasonable relation between cause and effect. Fundamental principles are the factors which make the modern practice of medicine scientific.

As the apology at the beginning of this paper permits me to refer to the broader field of oral, rather than to dental, pathology, I would emphasize again the importance of catarrhal affections of the mouth, nasal and accessory cavities, but in this connection, a short consideration of the baneful effects of deformities may justly be noticed. I will refer to the necessity of correcting abnormal growths in the naso-pharynx as of great importance; to the removal of polypoid and other tumors in the nasal and accessory cavities; to the correction of deformities of the teeth, dental arches, and of the hard and soft palate. May I repeat what I have already written in another paper presented before the First District Dental Society of New York state?

About 90 per cent. of the cases of lymphoid hypertrophy of tissue in the pharyngeal vault are accompanied by hypertrophic amygdalitis with adhesion of the anterior pillars of the fauces to the tonsils. Here, then, is another obstruction, and in early childhood there seems to be little doubt that the tension exerted

upon the velum palati by the adherent pillars during the act of deglutition is a factor in deforming the upper jaw. I have referred to hypertrophy of the glandular tissue at the base of the tongue. Although of slight consequence as an etiological factor, its presence causes obstruction by narrowing the faucial space, making deglutition additionally difficult, and mouth-breathing a still greater necessity. . . . I have spoken thus far only of cases according to a common rule of development and not of any exceptional condition. Many anomalies of etiological significance are found, among which may be mentioned many varieties of tumor, including, as of special significance, myxomatous polypi in the nasal chamber and in the maxillary sinus in adults.

I have merely referred to a foetal enervation and faulty nutrition, and I wish simply to say that they are coincident with the abnormalities already considered and that the mere presence of the deformities named is *prima facie* evidence of faulty nutrition both pre- and post-natal.

These structures are all more or less dependent one upon the other and must be considered as in the same surgical field. This seems to be a "terra incognita" to the medical man, and authoritatively, let me assure you again that it is being rapidly absorbed by the dentist of to-day, who, if recently educated, is abundantly capable of coping with its mysteries.

Aside from the general principles of relationship already pointed out, I would like to call attention to some of the abnormalities, if I may so call them, of the eccentricities of pathological manifestations.

Amaurosis, without special reference to any certain variety, has been known to arise from dental irritation. A case cited by Professor Galegowski is a type of others observed by different men. I give a condensed resumé:

F. P., 30 years of age, enjoying good health, with the exception of pains in the head and limbs, suddenly experienced in the autumn of 1825 a violent pain shooting from the left temple to the eye and side of the face. He ascribed it to cold. This pain lasted several days, then lessened and re-appeared from time to time, without being sufficiently severe to induce the patient to seek medical aid. In about two months it suddenly increased in inten-

sity,—occupying the eye particularly,—with a feeling as if it would pass out of the orbit. The patient now discovered that he was blind in that eye and applied to a neighboring physician, whose treatment did no good. The pain, however, was no longer continual; it assumed a somewhat periodical character, leaving him easy for some hours of the day. At the end of the following six months the pain increased, the cheek swelled, some spoonfuls of bloody matter were discharged by a spontaneous opening in the lower eyelid, after which the swelling subsided and the pains nearly disappeared, although the blindness remained complete. The discharge was renewed from time to time during the following six months, and there was no great suffering. But in the autumn and winter, 1826, the pain, particularly in the eye, became so violent that he came to Wilna at the beginning of 1827, determined to have the organ extirpated if no other remedy could be found. Professor Galezowski found the left eye totally insensible to light, with the pupil dilated and no other visible alteration. The pain, not then so severe, consisted in violent occasional pricking and darting sensations in the left temple and parts around the eye. The first molar tooth on the left side was carious. It had not caused much uneasiness, and the toothache, when it existed, had not coincided with the pains in the temple and eye. The professor determined on removing the tooth, and having done so, was surprised to see a small foreign body at the extremity of the fang. When drawn out it proved to be a small splinter of wood, about three lines in length, which had traversed the centre of the tooth, and had probably been introduced while picking the teeth. A probe was passed from the socket into the antrum, from which a few drops of thin purulent fluid escaped. The pain ceased almost entirely, and on the same evening the eye was sensible to light. Vision gradually improved so that on the ninth day the patient could see as well with the left as with the right eye, after a blindness of thirteen months. On the eleventh day he left Wilna to return to his family.

Numerous other cases might be quoted, but the following will suffice to give an idea of their general character:

A patient of Mr. Hancock's became suddenly blind; when examined the pupils were seen to be fixed and dilated; the entire absence of premonitory symptoms and of structural lesions having led to the conclusion that the disease was of reflex origin, the mouth was examined, and great crowding of the teeth discovered.

Six teeth were removed, and on the same evening the patient, having been totally blind for upwards of a month, was able to distinguish light from darkness, and in the course of a week was entirely cured, no other treatment, save two doses of aperient medicine, having been resorted to.

A similar condition of functional amaurosis has been known to follow the extraction of a tooth, the effect speedily passing off under the influence of sedative applications to the socket.

In a second case of amaurosis of eight months' duration with entire fixity of the pupil, and inability to distinguish light from darkness, a carious second upper molar tooth was found. After the extraction of the tooth, the sight gradually improved and was entirely restored in a few days.

It is the opinion of Mr. Hancock that a purely functional disorder may, if allowed to continue unchecked, lead to permanent structural lesion. Such attacks differ from the advent of the true amaurosis in their sudden access, in not having been preceded by dimness of vision, *muscae volitantes*, flashes of light, pain, and symptoms of like character. Entire absence of local pain in the teeth seems to be the rule and not the exception; indeed it often seems as though manifestations of local pain stood, in some measure, in a complementary relation to one another, so frequently is the disappearance in the one place coincident with the access in another.

Hay met with an instance of photophobia and pain in the eye, together with severe darting pains in the face, which were provoked by tapping or touching an incisor tooth. On the removal of the tooth these symptoms disappeared; at the root of the tooth an abscess was found.

Sir Thomas Watson¹ mentions a case in which blindness, confined to one eye, recurred three or four times, always being cured by the extraction of carious teeth.

DeWitt found vision to return in an eye which had been totally blind for twelve years, after the removal of an amalgam filling, beneath which was pent up some decomposing pus. Pain returned and coincidently the sight deteriorated,

¹ "Lectures on Physics, 4th Edition."

but after the extraction of the tooth the blindness wholly disappeared, though the patient could not distinguish very small objects.

Another patient suffered for fourteen years from congestion and lachrymation from one eye and photophobia, these symptoms being aggravated by unsuitable diet; the symptoms began to amend and soon disappeared after the extraction of a carious tooth.

A patient under the care of Mr. Salter and Dr. Hyde Salter suffered from dimness of vision and aching pain in the eye, and likewise from facial paralysis, which rapidly became complete. This was clearly due to the portio dura being involved in plastic inflammatory products in the parotid region, due to carious upper wisdom tooth; the eye affection may, more probably, have been reflex, as it occurred afterwards when a lower tooth was in fault and was accompanied by painful paralysis of the arm, which was unquestionably reflex.

One case of exophthalmia has been recorded which appears to have had a dental origin; there was much pain, the eye was red, and there was marked exophthalmia. The cornea was hazy, the retina injected, and a few haemorrhagic spots near the macula; heart, lungs, and urine normal. Ten days later acute chemosis supervened, with much periorbital pain; and two carious teeth and a stump were removed, with the result that in three days there was a marked improvement, the chemosis had disappeared, as had also the injection of the conjunctiva and the exophthalmos. Possibly the explanation of such a case as this may be found to be in an inhibitory action upon the vaso-motor system, set up by the irritation of the fifth nerve, leading to an engorgement of all the parts supplied.

Mr. Power thinks that it is not at all improbable that dental disease may be the starting-point of glaucoma, seeing that experiment has shown that irritation of the fifth nerve can alter the vascular tension of the eyeball, and the disturbance of tension is the first and most conspicuous phenomenon in

glaucoma, of which disease, pain in some of the branches of the fifth nerve is a very frequent precursor; on the other hand Priestley Smith has investigated the tension in a large number of cases of toothache in young persons at dental hospitals, without finding any really definite alteration of tension.

Mr. Power sums up that in all cases of threatening glaucoma, especially when this is associated with ciliary neurosis and obscure pain in the temples and maxillary orbital regions; in all cases of mydriasis and probably of myosis, originating without apparent causes; in all cases of sudden paralysis of either of the orbital muscles, or of loss of sensation in the absence of cerebral symptoms; in all cases of phlyctenular disease of the conjunctiva; in all cases of ulcers of the cornea resisting ordinary treatment; in all cases of the sudden failure of the accommodation, especially in young children; and finally in all cases of exophthalmos, the condition of the teeth should at least be examined, and if faulty conditions present themselves, these should be at once rectified, and then one at least of the possible causes of these diseases will be removed.

Hydrocephalus is not uncommonly indirectly caused by dental irritation. The close communication between the sinuses and cells of the bones of the superior face has only to be viewed from an anatomical standpoint to convince that a progressive inflammation is exceedingly apt to supervene upon sufficient cause from inflammatory changes in alveolus or within its cavity from dental pulp, or more directly, from pericemental membrane. Communication with brain structures is very direct. Dr. Fillebrown of Boston, a dentist and medical man, has demonstrated the frequency of such communication through the infundibulum between the frontal sinus and the nasal cavity. It is true that very few pathogenic organisms are found in the nasal cavity, but from a putrescent tooth-pulp of the first or second upper molar tooth may, and probably will, come a purulent inflammation in the antrum and from there to the nasal mucous membrane, and

thus on to the ethmoidal cells and the frontal sinus. The naso-pharynx and the porous sphenoid bone are not far away and the meninges of the brain are not remote. General conditions supervene upon the inception of the septic inflammation, and the whole organism is thrown into pathological sympathy with the primary cause.

It will not be necessary for me to enter into the discussion of metastatic reflex in the more remote regions of the body, since I have illustrated the effect of contiguity, of continuity, and of reflexes. Suffice it to say that all diseases are not caused, either directly or indirectly, by abnormal variations in the dental or other oral structures. At the same time, and in support of what I have said, many of them are directly or indirectly caused by such pathological changes. *To the point*: Are they capable or susceptible of correction? Certainly we should look after the causes of dental caries; of the causes of infectious diseases to the mucous membrane of the oral cavity; and to the relationship between the diseased conditions of the beginning of the alimentary tract and the remaining functions of digestion. Is stomatology out of the domain of medicine and surgery? Shall the doctor of dental surgery be taught the art and science of medicine, or shall the medical man learn the necessary arts incident to the correction of dental pathology and the mechanics so much a part of arthodontia? Perhaps a middle ground might be taken and a closer sympathy established between the dental expert and the practitioner of medicine and surgery.

Just a moment for the other side of the question. It is of course certain that the relationship alone is placed upon the ground that the pathological condition of the mouth is the offender and does not depend in great measure upon the general state of the system. Faulty nutrition from other causes reacts just as severely upon the tooth structures. But it was not my intention to take up this part of the subject. I wish to show that we are too apt to ascribe such diseases as pyorrhea alveolaris, all forms of stomatis, etc., to reflex results of disordered states of the system, when in reality the great

majority of cases originate in the mouth from the local disturbances manifested by caries of the enamel, acid secretions, or from syphilitic and other local infections.

The results of correction of deformities and of dental irregularities are far reaching, among them being the establishment of good digestion; the amelioration of septic conditions, and renovation of a system disturbed by causes, the effects of which, to say the least, are disastrous to a healthful constitutional balance.

I have come far short of exhausting the subject, the time allotted me being sufficient only for suggestion.

DISCUSSION.

DR. HOLT said that he had come to this session particularly to hear this paper. At the Maine Eye and Ear Infirmary there was a clinic of stomatology, and it had been found very serviceable. The paper reminded him of an advertisement seen twenty-five years ago. A bachelor advertised for a wife, and the only restrictions he made, were that she should have perfectly sound teeth and be about thirty years old. It was almost needless to add that he never had an answer to the advertisement.

DR. ROCHESTER said that the care of the mouth in acute infectious diseases was of much importance. In modern cases of typhoid fever one did not see the collections of sordes on the teeth spoken of by the earlier writers, and this was because care was taken to keep the mouth clean and aseptic. He recalled two cases of persistent headache that had been the rounds of a number of physicians without being cured. Their errors of refraction had been corrected, their gastric secretions had been investigated by the use of the stomach tube, and one had had the rectum dilated. Careful attention, by a competent dentist, to the condition of the mouth sufficed to effect a cure. This was eight months ago, and there had been no return of the headache. This paper also emphasized the necessity for teaching children the harmfulness and filthiness of that ever-increasing habit of chewing gum.

URETHRAL STRICTURE; A FEW THOUGHTS ON ITS GENESIS AND MANAGEMENT.¹

By J. W. S. GOULEY, M. D., of New York Co.

Read by title.

The little time allotted to each participant in the present discussion on urethral inflammation and its effects, has rendered it necessary for the writer to confine himself to the statement of only a few thoughts on the genesis and management of idiopathic stricture.

1. Half a century ago stricture was regarded as due solely to damage done the mucous membrane by local treatment of urethral inflammation. Undoubtedly the old heroic treatment of acute urethritis often did such violence to the canal as to give rise to the worst kind of stricture; but stricture was then known to occur after urethritis that had not been subjected to this so-called abortive treatment, and in these cases the cause was unexplained.

2. It has since been made clear that urethritis is the real germ of stricture, that without treatment the phlegmasiac process is continuous from incubation to confirmed stricture, and that when the acute urethritis is rightly treated and speedily and completely cured, the nascent stricture is nipped in the bud. Therefore, in general terms, may it not be said that acute urethritis is a stricture *in posse*, and chronic urethritis a stricture *in embryo*?

3. After acute or sub-acute urethritis, stricture is of slow formation, and it may be years before the urethral calibre is seriously reduced; while super-acute urethritis, with involvement of the spongy substance, is likely to give rise, in a few months, to a rapidly contracting and distressing stricture.

¹ Originally read at the Fourteenth Annual Meeting of the Fifth District Branch of the New York State Medical Association held on May 24, 1898.

4. There does not seem to be any tissue peculiar to stricture, as was formerly believed; the stenotic process, in the vast majorities of cases, being the effect of chronic urethritis with inadequate repair of local epithelial exfoliation and the consequent formation of a scar-tissue that is progressively undergoing sclerous degeneration and contraction precisely as does the scar-tissue of some severe burns of the skin.

5. Hence chronic urethritis, regarded as a stricture in embryo, demands, beside other local treatment, the long-continued use of dilating instruments as preventive of the steady contraction of the canal which otherwise would surely occur. It should, however, be remembered that every chronic urethral discharge is not necessarily dependent upon urethral inflammation, and that chronic urethritis often exists without any discharge that is perceptible to the unaided eye.

6. The nodular masses felt in the vicinity of old strictures are often due to inflammatory action caused by extravasation of a few drops of urine in the peri-uréthral connective tissue, leading to the establishment of a fistula, and have no direct relation to the sclerous tissue which had given rise to diminution of the urethral calibre.

7. As a general rule, in narrow resilient strictures following urethritis, the mucous membrane and thin layer of underlying connective tissue only are affected and, instead of a thick ring of nodular tissue, there is in reality, as already said, sclerous degeneration of a mere film of scar-tissue with destruction of adjacent mucous glands. Therefore there is nothing requiring absorption, but on the contrary there is need of regeneration of tissue, the promotion of which is effected by making, in the long axis of the canal, a gap which is soon filled with granulations that gradually become organized. The urethra, at the seat of disease, is thus spliced by new scar-tissue and the splice is kept as wide as possible, during the healing process, by the persistent periodical employment of dilating instruments, the use of which is continued until the cicatrix ceases to contract.

8. Confirmed, but not narrow or resilient, strictures, are

ordinarily cured by gradual dilatation, which, however, when carried to high numbers of the catheter scale, does not merely stretch, but does split the mucous membrane and break up the fibrillae of the scar, and this process of divulsion manifests itself by the slight haemorrhage following the last catheterism. At this moment two or three larger instruments are passed in succession to ensure the required extension of the resulting gap, which is kept patent by periodical dilatation until the parts are completely healed, and for a long while thereafter.

9. In cases of narrow, resilient strictures of the antescrotal region, internal urethrotomy and subsequent prolonged periodical dilatation are clearly indicated as they are in those narrowings of the meatus and of the fossa navicularis, which are so refractory to other methods of treatment. However, incision of the meatus should never be so extended as to cause the traumatic hypospadiac monstrosity that has heretofore been so common and so injurious to body and mind.

10. Narrow strictures in the scrotal and perineal regions of the urethra, even when admitting only capillary bougies, are generally amenable to the process of divulsion described by the writer in a paper presented to this Association in the year 1895. The divulsion is effected, at one or two sittings, by the successive introduction of conical tunnelled sounds, slid over a whalebone conductor from No. 1 to No. 14 or 15.

11. The sudden and violent modes of divulsion so much in vogue thirty years ago, have since been condemned by prudent and judicious surgeons, and are now seldom heard of.

12. The capillary probe-pointed bougie, elbowed at its vesical extremity is particularly well adapted for the entrance of a narrow stricture with eccentric lumen, and for serving as conductor to the tunnelled catheter or sound.

13. In case a stricture proves undilatable beyond No. 2, a web-bougie of that size is introduced and retained in position forty-eight hours—the urine meanwhile trickling at its side—with the effect of soon facilitating divulsion or urethrotomy.

14. When a narrow stricture, in the perineal region, is refractory to the dilatation preliminary to divulsion, or when it is complicated with fistulae or with urinary extravasation, the safest resource is external perineal urethrotomy followed by periodical dilating catheterism long after cicatrization of the parts.

15. Close observation and mature experience have taught surgeons that there is no known method of treating stricture that does not require the periodical use of urethral dilators for a long time after the stricture has seemed to be cured; gradual dilatation, divulsion, internal and external urethrotomy, being only means to the desired end, which is the restoration of the normal calibre and suppleness of the urethra.

16. Unduly frequent and excessive dilatation of the urethra, say to No. 20 (Engl.) applied every day or two, seems to be an unwise and irrational procedure which often leads not only to loss of the suppleness of the mucous membrane, but to permanent contracture of the whole canal; such abuse of the large sounds being practically the infliction of a series of traumatisms exciting a urethritis whose exudate in the meshes of the ambient connective tissue constantly undergoes sclerous degeneration, the entire canal finally assuming a condition which may be likened to that of an old, hardened, inelastic India-rubber tube.

TUBERCULOSIS.

By F. O. DONAHUE, M. D., Onondaga County.

October 18, 1898.

Society is slowly beginning to recognize the debt it owes to medicine in its various departments, but there is none to which it owes more than to that of preventive medicine.

Of the many ramifications of preventive medicine by which it sends its protective influence to all the people, the rich and the poor alike, I shall devote a little time only to its function as a guardian against that scourge of the human race, tuberculosis.

Hitherto, or at least up to quite a recent period, this disease did not receive attention from governments, for the reason that enough was not known regarding its behavior and origin; not that no suspicion existed regarding its contagious nature, but the time had not come when its contagiousness was established beyond peradventure.

The impression that tuberculosis is contagious is by no means a creation of yesterday; the disease is indicated in the Mishna and other Jewish works as rendering the meat of animals affected unfit for food. Throughout the seventeenth century the flesh of tuberculous animals was excluded from human food alike by the civil and ecclesiastical laws of Europe.

Tuberculosis was erroneously identified with syphilis, which made a frightful extension in the end of the fifteenth century, spreading from the army of Charles VIII, which had been engaged in the siege of Naples. The conviction that tuberculosis and syphilis were identical was disproved in 1782; yet the opinion prevailed among advanced thinkers that tuberculosis was contagious. There were, however, many

features of the disease which could not be explained, for other contagious diseases, among which are smallpox, measles, and typhus fever, attacked all individuals who were not rendered immune by previous attacks, regardless of condition of bodily health or of sanitary environment. Then, too, in these diseases a definite period of incubation intervened between exposure and development, while in tuberculosis no such definite characteristics could be shown. And in this connection I may say, that at the present time, this is the greatest obstacle in the way of convincing the great majority of lay people that tuberculosis is contagious. Most contagious diseases have a very definite period of incubation, while tuberculosis has no such definite clinical history or period of development; after the germs find a lodgment in the system, it may be weeks, months, and even years before the health is affected.

Again, tuberculosis does not attack all people regardless of condition of health and environment. Many people are immune from this disease, which means that the germs, if taken into the system, are destroyed in the physiological processes of digestion. Then, too, the blood itself, in a pure state, is known to be a germ-destroyer. Immunity, therefore, means a perfect condition of health.

It seems singular that science was obliged to wait until the last quarter of the nineteenth century before consumption could be proven to be contagious. The opinion prevailed very generally, yet there were many important features of the disease which must needs have been explained before sceptics would become believers.

In 1865 Villimen, an able French experimentalist and physician, established the fact that tuberculosis could be invariably produced by inoculation, by injecting sputa from consumptives into the lower animals, without knowing what was the infecting element in the sputum.

It remained for Robert Koch of Berlin to determine the one and only cause of consumption. This he did in 1882, when he announced his discovery of the bacilli tuberculosis

to his medical confreres, fortifying his claim with such an array of facts and conclusive experiments that it was speedily accepted by all scientific men who have patiently studied the subject. From this time onward, the bacillus tuberculosis, or Koch bacillus, has been the subject of earnest work by nearly all physicians who have occupied themselves with experimental medicine, and by students generally in medicine, and a consensus of results shows a thorough endorsement of the exclusively contagious nature of tuberculosis, and the bacillus tuberculosis as its one and only cause.

When these bacilli are taken in with food or drink they enter the system at one or two different points,—through the mucous membrane of the throat, or through that of the intestine, the germ lodging in the follicles of the tonsils or the ducts of the mucous glands. Here they may develop and form local tubercle, or pass on in the lymph-current to the nearest lymphatic gland, developing a condition formerly described as scrofula. It was always known that so-called scrofula was the precursor of consumption, but just what relation the one bore to the other was in doubt. It is now known that these enlarged glands are the result of tuberculous deposits which have been arrested before passing into the general circulation. Many times these glands break down and form abscesses, and the local infection is thus eliminated from the system. More frequently they are re-absorbed, and then general infection of the system takes place. There is a potent source of protection in the acids of the gastric juice. The bacillus thrives in a neutral or alkaline medium, but is rendered inactive or is destroyed by acids. Hence it is that persons with normal digestion are not prone to the disease.

Apart from the human family, which shows a marked proclivity to the disease, the bovine race may be said to stand at the head of the list of susceptible animals. Yet the sheep and pig do not successfully resist the disease. The goat is less readily affected; the horse is rarely attacked. This is accounted for by his greater amount of out-door life, and the

better tone in which his whole system is habitually kept by exercise.

For man, it is the tuberculous cow that is most to be dreaded, because her milk is consumed uncooked by the invalid and infant; whose gastric digestion is often so poor or disturbed that bacilli can safely pass through to the intestines. Milk is often the sole food of these weak subjects, and thus the bacilli, if present, are taken in large quantities.

If the udder of the cow is tuberculous, tubercle bacilli are always found in the milk. The reverse is not always true, for bacilli have been repeatedly found in milk of tuberculous cows whose udders were free from disease.

During the winter of 1892 the question of transmissibility of tuberculosis from bovine animals to man through the medium of the milk was discussed at length at the meetings of the New York State Board of Health. After much deliberation, it was thought that the most likely source of infection, especially in infants, causing such a high mortality from tuberculosis among them, was the milk-supply. The statistics of the New York State Board of Health showed that for a period of eight years prior, every eighth death was caused by tuberculosis. Practically no efficient measures were taken up to this time to restrict its prevalence, notwithstanding that 12 per cent. of our mortality was justly chargeable to it and that it was a contagious disease. Tuberculosis cuts off over 12,000 inhabitants in the state of New York yearly. No other disease approaches it as a cause of mortality in the human family.

The board desired power to investigate dairies, being of the opinion that there could be traced to tuberculous milk the cause of the fearful mortality in infants born of healthy parents. A precedent was looked for in vain for the work to be undertaken. There was nowhere in existence any legal machinery which gave power to examine dairy cattle for tuberculosis. A large-hearted governor induced the legislature to take the initial step in this reform, saying that as a rule he thought the state could not appropriate

money for the use of physicians to establish a pet theory, but the arguments of the committee from the board appeared so conclusive and reasonable that the state could afford to pass this bill with an appropriation of \$5,000 to determine the correctness, or otherwise, of the premises.

Prior to 1892, there was in existence in the state of New York no statute which gave authority to deal with the examination of cattle to determine the existence of tuberculosis; nor was any other state or country engaged in the examination of dairies for tuberculosis, with the authority of statutory enactment. It is true that boards of health have been empowered to seize and confiscate tuberculous meat, and examine cattle at abattoirs for tuberculosis. The state board of health desired further powers, and with the influence of the executive, who took a deep interest in the matter, caused the passage of the act known as the "tuberculosis act." This act was passed, and signed by the governor, in May, 1892, and authorized the state board to inspect cattle within its boundaries, and cause any bovine animal found to be suffering with tuberculosis to be killed.

This law deals with the largest industry in the state of New York. The value of live-stock on the farms in the state exceeds that of any other state in the Union. It is estimated that about \$40,000,000 worth of milk and its product is consumed in New York state every year, and according to the census of 1890, there were nearly 2,000,000 milch cows in the state. It will be seen that the undertaking was a large one; but every work must have its beginning.

The proportion of bovine animals slaughtered for human food which are found to be suffering from tuberculosis varies greatly in different countries, owing, no doubt, to the standard of official inspection. The proportion of tuberculous to healthy bovine animals in 1891, according to official figures, was less than 1 per cent. Much of this discrepancy was doubtlessly proportionate to the strictness of the examination.

The conveyance of infection through meat has been abundantly proved. The field of infection is most likely to be in the stomach. Recent investigations have shown that the bacilli tuberculosis is destroyed by the sun's rays in a few hours. The danger of infection through the respiratory tract is therefore lessened. The broad fact is established that a tuberculous cow may give tuberculous milk, and will do so if her udder be affected, and if in a given case a tuberculous cow does not give infected milk, it is only a question of time before she will do so.

The state board of health began the examination of cattle in Westchester county, in August, 1892, and adopted the method known to physicians as "physical signs." The investigations were begun here, because the disease was known to exist in this vicinity. Advanced and well-marked cases were discovered and destroyed, but the board and its inspectors were convinced that cases not well-marked were left behind.

Soon after, Dr. James Law, professor of veterinary science in Cornell University, and lately a member of the New York State Tuberculosis Commission, used Koch's tuberculin in making an inspection of several herds in Tompkins county. By the use of this agent he selected the diseased animals so accurately that the state board of health was convinced of its value as a diagnostic agent. Others soon made use of this agent with corresponding results. The board soon after adopted it, after becoming convinced of its innocuousness in healthy animals, and finally no animal was condemned until tuberculin was exhibited.

During the following year and a half, with a nominal appropriation and but a small corps of inspectors, the state board of health examined 22,000 cattle and caused to be killed out of that number about 700. The major part of this work was done in the region known as the Hudson River district, where those large industries in the making of condensed milk are located.

The proportion of tuberculous animals to healthy ones

from these figures, if used as a basis of calculation for the entire state, would be misleading if taken without explanation. Most of these examinations were made in districts and among herds where the disease was known to exist, and the percentage of diseased animals found is far too high in estimating the state as a whole.

The work of the state board of health in this line met with opposition on the part of many dairymen, who suffered some pecuniary loss on account of the slaughter of their cattle, and no doubt by reason of the stigma which attached on account of the publicity which was inevitable in the daily press, of certain herds being examined by the state board of health; and then, too, while compensation was allowed, much delay was occasioned by the infrequent sittings of the state board of claims, which tribunal has the authority to adjudicate all claims for the slaughter of diseased cattle.

Experience teaches that all innovations meet with opposition. Every disturbance in the equilibrium of time-honored ignorance is bound to meet with opposition; nor was it to be expected that this line of investigation would be any exception to the rule; moreover, it disturbed a large industry and entailed pecuniary loss to the individual.

The matter became the subject of senatorial investigation. The work of the state board of health was reviewed by a senate investigating committee with minuteness of detail. The senate committee after completing its investigation recognized the fact, that upon the report of the state board of health in the matter of tuberculosis, the care of the public health was a part of the continuous duty of the state, and this work, based upon the facts submitted, was not a task to be taken up in a season and afterwards laid aside.

The work of the state board of health for the time under consideration evolved the fact that tuberculosis existed in the dairy-cattle to quite an extent, and that special legislation was necessary to deal with it. The facts submitted were unanswerable arguments for creating a commission with authority to exercise continuous investigation. The recog-

dition by the state of its duty of maintaining a department clothed with authority, coincides with the next stage of evolution in the matter of the examination of the milk supply for tuberculosis. With the assistance of the governor, who had been active in his support of the measure from the outset, a special commission was created for the continuance of this work, on the 31st day of May, 1894, with all the powers formerly possessed by the state board of health.

During the short time this commission was in existence, it carefully studied, by a system of special inspection, the prevalence and distribution of the disease, stabling, mode of infection and local conditions, and the disposition of the dairy products, for the purpose of building up a knowledge of the existence and behavior of tuberculosis in cattle, and the work gained new interest by the striking lessons drawn from field-work among the dairies. This commission was engaged in the work of examinations for tuberculosis in the eastern, western, and central portions of the state, with the object of determining the distribution of the disease. The small appropriation placed at its disposal precluded the commission's making anything like a complete examination of all the cattle in the state; its aim was rather to determine its prevalence, and submit a report of its findings to the subsequent legislature.

The commission on tuberculosis in cattle met with no antagonism in its work for two reasons; first, the people were becoming educated to the importance of the work; and, second, the owners of the cattle were compensated. Before the cattle were destroyed, if found diseased by the commission, appraisers were appointed, one by the comptroller of the state and one by the owner of the condemned cattle. The animals were appraised at their sound value and were then slaughtered; an autopsy was held in each case, and if it was found that tuberculosis existed, the owner received not more than \$25 for a grade animal; but the appraisal in order to insure this amount must be double the amount stipulated.

The contagiousness of the disease is established beyond any doubt, for in most cases it could be traced from herd to herd. This has been especially noticed in localities where cattle-owners deal with each other in the purchase of cattle from infected herds. In the investigations made it has not been found that any distinct breed of cattle has immunity from tuberculosis. Grade cattle have been found to be as susceptible as any other variety.

The lesions discovered on postmortem examinations are variable, from small deposits of tubercles to quite generally disseminated lesions in the different viscera. In many instances the udders have been found the seat of the lesions. It would be interesting to make a microscopic examination of the milk from each cow suspected, but for obvious reasons this would be impracticable.

In the hands of the inspectors employed by the state board of health and latterly by the tuberculosis commission, tuberculin has proven itself to be a valuable diagnostic agent. In many instances it has been noticed that cattle well nourished give high reactions, and upon condemnation, slaughter, and autopsy, reveal lesions of tuberculosis.

In the nature of things, it must take time to eradicate this disease from the dairy-cattle. It is confidently expected that future legislation will be enacted, carrying with it an appropriation commensurate with the magnitude of the work.

Tuberculosis is the scourge of the human race. One in eight of all deaths in this state is caused by it. That it is contagious needs no proof at this late day. Experiments without number attest this fact. That it is communicable from man to man and from animals to man is not now disputed. This has passed beyond the stage of dispute, and is no longer open to doubt.

It is only within the past few years that attention has been paid to the connection of cause and effect between human and bovine tuberculosis, but because in all the years prior no connection was made out between the two, it most certainly did not follow that none existed. All the evidence gathered

in recent years has indeed established a most intimate connection between the two.

In making any attempt to classify diseased animals, it is easy to say the disease is localized and can do no harm, but in studying the disease it is impossible to decide at what period it becomes general. No one can say absolutely that the germs have not commenced to be circulated in every part of the body; therefore every animal affected should be destroyed. The work is engaging the best attention of all civilized nations. While New York, through its state board of health, took the initiative, it is not to-day by any means in advance. Massachusetts is now engaged in a systematic inspection of all the dairy-cattle. No animal is allowed to enter said state unless accompanied by a certificate from an undoubted source setting forth the fact that it is free from tuberculosis. Other states are likewise engaged, and their efforts to eradicate tuberculosis are ably seconded by the Department of Agriculture, Washington, D. C.

The work has been retarded in this state by reason of deep-seated prejudice. This, however, is now fast disappearing, as people are beginning to see and understand the importance of the work.

The moral of the whole subject is, that the state must take this question up and deal with it on a larger scale until every tuberculous animal is destroyed. It should not, however, be retarded at the behest of a few ignorant fanatics, nor until the last person in the state is sufficiently enlightened in this matter to give assent.

It is of great economic significance, apart from its danger to human life, but human life cannot be measured by the money standard; the value of cows can. If the importance of tuberculosis in human beings, amounting to about 12 per cent. of all deaths, could be estimated, there would be little need of further time in the process of evolution of this subject before steps were demanded for checking the immensity of our annual losses by consumption.

A cow infected with tuberculosis forfeits her right to live,

and her owner's right to have her live. Reasonable compensation is granted to owners of tuberculous animals for the very sensible reason that such animals are valuable to the public only when dead.

The tuberculosis commission in different parts of the state condemned and slaughtered 558 tuberculous cows, and the owners of these animals have been paid awards by the state amounting to \$11,668.75. Each cow slaughtered showed unmistakable lesions of tuberculosis, many far advanced with the disease. No act of the legislature in recent years will confer such lasting benefit on the state and on the dairy interests, as that which conveyed power to examine cattle for tuberculosis. The work needs to be extended by more liberal appropriations until every tuberculous bovine animal in the state is condemned and slaughtered.

New York state took a step forward in sanitation in authorizing the state board of health to examine cattle for tuberculosis, for the relation of the milk supply to infant mortality was insisted upon by the members of the board who had made it the subject of systematic observation. Statistical proof is almost the only proof that the subject admits of. Lower animals fed on tuberculous milk immediately become infected. To all minds capable of estimating the force of evidence, reasoning from analogy, the proof is conclusive. Sanitary science has long been warning the public, and pointing to avenues of escape from growing difficulties, but indifference, ignorance, and fear of expenditures are still holding many communities in what appears to become for them a death-like grip. Here, as in many other phases of modern society, education will be the only escape from growing evils.

The dissemination of tuberculosis by infected milk has been demonstrated so frequently that any further illustrations would be quite out of place at this time.

It is not contended that if every tuberculous cow were slaughtered, the disease would be eradicated, as man himself harbors the infection, but this does not change the general

principle, that so potent a source of such a scourge should not be dealt with and strenuous efforts put forth to annihilate the disease in dairy cattle. It is the plague of civilization with no quiescent period, but with constantly increasing number of victims among all classes of men, women, and children.

In some sections, notably Massachusetts, public opinion is beginning to be aroused to the danger of infection from this source, and it is the duty of the medical profession to continue preaching, in season and out of season, that tuberculosis is preventable.

It is virtually agreed by all pathologists at the present time that tubercular infection takes place either by the respiratory or digestive organs. It is, of course, impossible to state through which of these channels infection takes place more frequently. By reason of the fact that pulmonary tuberculosis is more frequent than other visceral involvement by this disease, the general opinion obtains that the disease is more frequently produced by inhalation; moreover, since it is definitely known that it may be conveyed by infected dust. The fact that cow's milk enters so largely into the diet of infants and children, and that it is practically the only diet of artificially fed children, is sufficient in itself, taken in conjunction with the special character of the distribution of the lesions in infancy and childhood, to arouse suspicion that milk is the most usual vehicle of infection in them. Few facts are better established than that the milk of a tuberculous cow, when the disease has reached the stage in which the udder is involved, does contain the tubercle bacilli in an active state. Tuberculosis in the cow is, as a general rule, a somewhat chronic disease, and animals which have it for a considerable time may yield a fair supply of milk and keep in good condition.

Examinations made in certain sections of this state revealed so extensive a prevalence of tuberculosis among cattle as to create a very material alarm in the minds of dairy-farmers. It is doubtless owing to this hostility in a

large measure that appropriations were withheld by the present administration for the continuance of the work.

The law is still in force, and the commissioners are drawing their salaries, but for the past two years the work has been at a standstill. It must and will be taken up again, for civilization will demand that the product of the dairy shall be free from the germs of a lingering infectious disease, the most destructive that afflicts humanity.

DISCUSSION.

DR. HIRAM A. POOLER, of New York County, asked if the reader of the paper had found tuberculosis more prevalent among cattle in one locality than in another. The paper just presented was a very important one, and its subject was far-reaching. There could be no doubt that science had proved conclusively the contagious nature of tuberculosis. In the past he had been personally engaged in the effort to defend the infants of New York City from being poisoned by tuberculous milk. Dr. Donahue had advanced the correct theory,—that tuberculosis is more often carried into the system through the digestive than the respiratory organs. The reason he had inquired as to the greater prevalence of tuberculosis in some counties than in others was that the cattle in adjoining counties are contaminated and poisoned by their food. Poor food causes disease of the digestive organs, and enables the tubercle bacilli to gain a foothold. He had examined the milk of cows fed on brewers' feed and glucose grains, and had been able to establish a distinct difference between the milk from these animals and those fed on more healthful food. He had also observed that tuberculosis was more prevalent in districts where bad food was used than in other localities. He wished to state that in New York City and other large cities, three fourths of the infants are fed on milk and artificial food, and hence, the vast importance of the state regulating the feeding of cattle and the character of the milk supply.

In 1883 he had appeared before a legislative committee, and had presented the same arguments brought forward in this paper. As a result a law was passed, that no unwholesome food should be given to cattle. This law was still on the statute books but it had provoked endless argument and litigation, as the cheapness of the bad feed made many farmers desire to continue its use. Thou-

sands of infants were to-day dying from disease conveyed to them through their foster-mother, the cow. He had in his possession also some beautiful specimens showing tuberculosis in mother's milk.

DR. H. O. MARCY, of Boston, said that the public had its attention so thoroughly directed to this matter in Massachusetts that the people were beginning to demand from the milk dealers proof that their milk was healthful. An attempt was now being made to systematically control the milk supply through inspection and regulation of the dairies. Only a week ago an exhaustive paper had been read in Boston by a gentleman who had spent the three years since his graduation in studying this question of the healthfulness of the milk supply. One could hardly overestimate the good done by arousing public sentiment on this subject. A scientist of considerable note in this field of work had been carrying on a long series of experiments in Cattaraugus county on the refrigeration of milk. It seemed at the present time that this process of refrigeration would destroy many bacteria and thus render the milk more healthful. The process consists in agitating the milk while it is being frozen. In this way, the water can be extracted from the milk so cheaply as to make the method commercially economical. The milk is subjected to this process of ice crystalization for six or eight hours. The bacteriological tests that had been conducted at the Institute of Technology in Boston, in connection with this work, showed that the pathogenic bacteria were almost entirely eliminated. Only about 7 or 8 per cent. of water is left in the product, so that it is a good deal thicker than cream. The more enthusiastic advocates of the method believe that in due time even this percentage may be eliminated and the milk sent all over the country as a solid product like butter. Dr. Marcy added that he was inclined to believe that this desirable end would be realized in the future. The keeping qualities of such refrigerated milk are excellent.

DR. H. D. DIDAMA, of Onondaga County, said that he could understand how Dr. Donahue, who had devoted much time to this investigation, did not care at present to go into the question of what should be done with tuberculous milk. He was sure it was the wish of the reader of the paper to have all the dairies of the state examined, and all the tuberculous cows destroyed.

DR. A. T. VAN VRANKEN, of Albany County, asked if a relation had been established between bovine tuberculosis in certain locali-

ties and human tuberculosis in the same localities. This was a very important link in the chain of evidence.

DR. S. A. KNOFF, of New York County, said that he had given this subject considerable attention. The majority of our states have no laws against bovine tuberculosis, and of those which have such laws, very few have good laws bearing on the subject. Again, some of them are handicapped by lack of adequate appropriations. It was a common impression that tuberculous milk only affects infants. In a work which he had just written he had given the results of investigations on this point. Formerly he had been an advocate of the idea that the majority of cases of human tuberculosis result from inhalation of tuberculous matter, but now he had become a convert to the view that about an equal number arise from the entrance of the tubercle bacilli into the respiratory organs and into the digestive system. The frequency of tuberculosis in infants was due to the fact that milk is almost the exclusive diet, and the general health is often very poor.

DR. DONAHUE, in closing the discussion, said with reference to the greater prevalence of bovine tuberculosis in given localities, that in the Hudson River district and in the eastern half of the state the disease was found to be very prevalent, and that little or none was found in the western part of the state. Some of the herds in the Hudson River counties were literally permeated with the disease, and, in some instances, whole herds were destroyed by the inspectors. There was no doubt in his mind that much of the milk that comes into New York City is infected with tuberculosis. As to whether it could be traced from cows directly to human beings, he questioned if this could ever be demonstrated. We could not, of course, experiment with human beings, and we could, therefore, only reason by analogy from observations on healthy cows turned in among a herd of tuberculous cows. This had been done repeatedly, and the healthy cows speedily became tuberculous. In his opinion, the danger of infection from aerial conditions had been greatly exaggerated. It had been said that the sun's rays would destroy tubercle bacilli in six hours, and hence that expectoration of tubercle bacilli on the sidewalk or street was not so dangerous as had been supposed. This was true of a test-tube containing tubercle bacilli and hung in the sunlight, but the conditions were different. As to the prevention of tuberculosis, it was, of course, wise to boil all milk before it is used by human beings.

NOTE.

To the Editor of the Medical Record:

I beg the privilege of correcting the report of my remarks at the meeting of the New York State Medical Association, which appeared in your esteemed paper of October 22d. A few remarks I made were incorrectly reported and I cannot let them go, as they do not represent my views and are contradictions of what I have expressed elsewhere.

(1) I did not say that I was "a convert to the view that the channel of tuberculous infection was the digestive tract." I said that I was willing to admit that formerly I held with many others the view that the dissemination of the germs contained in carelessly deposited sputum of tuberculous patients was the prime and most important factor in propagating the disease, but that recent information which I gained from studying the etiology and history of a large number of cases had converted me to the idea that tuberculous infection by ingestion of tuberculous substances should be considered as frequent as infection by inhalation.

(2) I did not say that in children the place of least resistance to the invasion of the bacilli was the lungs; this is not so. In children it is the delicate intestinal epithelium which offers to the bacilli contained in tuberculous milk the most favorable abiding-place. I said *à propos* of this mode of infection that the reason we so rarely find primary intestinal tuberculosis in adults, in spite of the frequent ingestion of tuberculous substances, is to be explained by the fact that the epithelial lining of the intestines is stronger and resists the colonization of cultures. If the individual is in poor health and the phagocytic power of the blood enfeebled, the bacilli ingested by a grown person usually find the apices of the lungs to be the *locus minoris resistentiæ*, which they reach through the medium of the circulation of the blood.

If you can insert these corrections in your next number I shall feel greatly indebted.

S. A. KNOPF, M. D.

THE TREATMENT OF CASES OF PULMONARY TUBERCULOSIS THAT CANNOT GO AWAY FROM HOME.

By DELANCEY ROCHESTER, M. D., of Erie County.

October 18, 1898.

I will introduce my remarks by the report of two cases :

CASE I.—November 13th, 1897, J. P. B., male; age, 25; nativity, U. S.; occupation, bank clerk; single; family history, good. Personal history: Residence in lower part of city, rather low land, in brick house without cellar; very little sunshine. Habits, good. Had scarlet fever in childhood; so-called "nervous fever" four and a half years ago; sick with high fever for four weeks, probably typhoid. In April, 1897, had an attack of epidemic influenza; since then has coughed constantly; has had, almost daily, an afternoon rise of temperature and, frequently, severe night sweats; appetite is poor; bowels are regular; temperature in afternoon 102.5° F.; tongue broad, pale, flabby, covered with slight gray coating; pharynx pale; larynx normal; physical examination of chest reveals infiltration of both apices with softening and small cavity in right upper lobe and infiltration at base of right lung, and general bronchitis throughout both lungs. The amount of sputum in twenty-four hours is 200 cc.; muco-purulent in appearance with nummular pieces; containing many pus-cells, some pus organisms, tubercle bacilli, micrococcus tetragenus, and elastic fibres. Weight, 149 pounds.

This case was not one that promised well for treatment, but I explained to the young man the nature and character of his disease and impressed him with the importance of attention to every detail of the treatment suggested and encouraged him in the belief that by persistence in treatment he might recover. The treatment instituted was as follows: An out-of-door life; sitting, well-wrapped up, on the veranda, when rain, wind, or wet snow prevented walking; at other times, walking in the open parts of the

city where the purer air can be found; careful attention to a daily evacuation from the bowels; a full, warm tub-bath once or twice a week and a cool sponge followed by brisk rubbing every morning; regularity in hours of meals and slowness in mastication and swallowing of food; diet to consist chiefly of meat, eggs, baked potato, boiled rice, stale bread and butter, and some of the green vegetables, fruits and plain desserts; beverages, milk (not to be taken at same meal with meat), water, cocoa or chocolate, coffee in moderation.

The medical treatment consists of a proper emulsion of cod-liver oil and the internal administration of guiacol and terebene made into emulsion with milk of magnesia and syrup of tolu and the use of an inhalation containing

Menthol . . . 1 part.

Spt. chloroform.

Guiacol.

Terebene.

Eucalyptol.

Thymol āā . . . 2.

five to ten drops on absorbent cotton packed tight in a cigar-holder inhaler for constant use, the drops and cotton being renewed every two or three hours.

He has been under this treatment for eleven months and has made constant but slow improvement. The entries on my record-book are as follows: "February 14th, 1898—Improved in all respects; weight 155 pounds, 10 ounces. May 9th, 1898.—During last two weeks has not felt as well; has coughed more; expectoration, however, is somewhat less (150 cc.); varying somewhat from day to day; the elastic fibres have become much less, the tubercle bacilli decidedly fewer in number, but the pus-cells and organisms remain about the same and the micrococcus tetragenus is still present; the physical examination still shows the evidence of infiltration of upper right lobe, though the evidences of active softening have disappeared and the cavernous breathing is becoming more bronchial in quality and pitch; the evidences of infiltration of left apex show that the area is much diminished and that the evidences of infiltration of the right base have disappeared; there remains, however, sibilant and sonorous breathing with râles throughout both lungs; weight 155 pounds, 4 ounces. At this time there was added to his treatment the following mixture:

R <i>Balsami copaibae</i>	6.00
<i>Mucilag. deaciae</i>	50.00
<i>Morph. sulph</i>	0.10
<i>Ol. menth. pip.</i>	0.10
<i>Ol. amygd. amar.</i>	0.20
<i>Syr. tolu.</i>	44.00

Misce-emulsis fiat—Sig. 4. cc every 4 hours.

From this time on his improvement continued uninterruptedly. On June 9th his weight was 156½ pounds; the expectoration had diminished to not more than 100 cc. in the 24 hours; the elastic fibres are no longer to be found, only an occasional micrococcus tetragenus, very few tubercle bacilli, but pus-cells and organisms still present.

I did not see the case again until October 10th. He told me he considered himself well and for the last month had taken no medicine save cod-liver oil, but had continued the use of the inhalation.

He has almost no expectoration—succeeded in saving only 2 cc. in 48 hours. Careful examination of the centrifuged sample shows no tubercle bacilli, no micrococcus tetragenus, no elastic fibres and only a few pus-cells and organisms; the physical examination of the chest gives no signs except bronchial breathing in right supra- and infra-clavicular region and an increase in vocal resonance in the same regions and in the right inter-scapular region. Not a râle is to be heard. His weight is 161½ pounds.

CASE II.—March 18th, 1898.—Mrs. G. W. K., U. S.; age, 36; occupation, housewife; residence, country village, well built, dry house; habits, good. Family history: Parents both dead at 69 years, mother of dysentery, father probably of some form of heart disease; one sister died in childhood of dysentery, one of acute phthisis following childbirth. Personal history: Patient has had all of the acute infectious diseases of childhood; has been well since then until present illness began; has two children, eldest three years, youngest three and one-half months.

Patient did not nurse first child; nursed second child for three weeks; had to stop on account of very sore nipples; says she took cold when baby was four weeks old and has coughed ever since, *i. e.*, for two and a half months. On February 3d, raised one ounce of dark blood. Her greatest weight has been 120 pounds; her present weight is 111 pounds, 10 ounces. She is pale and thin in appearance, has irregularly recurring chills and fever and occasional severe sweats. Her temperature at 2 p. m. is 103° F.,

respiration 22 and pulse 134, small and compressible. She sleeps badly on account of cough which is much worse at night. She has been distinctly hoarse for a week or ten days. Her appetite is poor, but she seems to digest her food, and has no gastric distress. Her bowels are persistently constipated. Her capillary circulation is poor as evidenced by cold and bluish hands and feet. Examination of throat shows a pale pharynx, but infiltration of posterior laryngeal wall with swelling of the arytenoid cartilages and some redness of vocal bands.

Physical examination of the chest reveals a weak cardiac first sound with marked accentuation of pulmonary second sound. Tubercular infiltration in upper lobe of each lung, with cavity of considerable size in right and small cavity in left. She did not bring her expectoration with her but said it was considerable, chiefly raised at night and in early morning.

I sent her home with a very bad prognosis, writing to her physician that I thought her case was one that would go on rapidly to death, but that it was always well to try in cases of tuberculosis even though they seemed hopeless. I gave her a diet-list and wrote out the following directions for her daily life: Sit out of doors all day long, covered sufficiently and protected from inclemency of weather. As strength returns, take drives and finally walks. Take a tumblerful of hot water every morning one hour to one-half hour before breakfast and a tumblerful of cold water one-half hour before each of the other meals. One hour after breakfast, whether there is desire or not, have a movement of the bowels, inducing it by enema if it cannot be had otherwise. Three hours after breakfast take one half pint of milk with a raw egg and a tablespoonful of whiskey or sherry stirred in it and a very little sugar. Three hours after dinner take the same or a cup of chicken broth with a teaspoonful of somatose stirred in it. Three hours after supper take one half pint of hot malted milk. With the noon meal drink a pint of lager beer or one half pint of ale or porter.

Every morning a cold-water spray over the shoulders and chest in front and back followed by rubbing with a soft crash towel. A cold sponge bath every afternoon at 4:30 or 5 o'clock, followed by a similar rub, a full hot bath in the tub once or twice a week.

Dress warmly with wool next the skin, but never wear a so-called chest-protector and never wrap anything around the throat. The medicinal treatment was the same inhalation as in Case I, and the same guaiacol and terebene emulsion.

On May 15th her physician wrote reporting improvement in all respects. On July 15th she again came into my office feeling much better in all respects. She had gained three pounds in weight; the chills and sweats had disappeared; her temperature was 100° F. though she said she no longer had fever; her pulse was 100, her respiration 20; appetite has returned; bowels are still constipated; she sleeps better; she coughs and raises less; her hoarseness has disappeared. Examination shows that the swelling and redness of the larynx have disappeared; there is still the cavernous breathing in each upper lobe but there are almost no râles.

Presuming upon her improvement she had already begun to let up on the strict carrying out of instructions. I tried to impress upon her the importance of persistence but I have since learned from her physician that she is failing again, having the chills, fever, and sweats but not to the same severe extent as formerly.

I have chosen these two cases from quite a large number because neither was a promising case for treatment, but each shows how much can be accomplished by persistent treatment.

With these cases as a text, I will now proceed to the treatment, hygienic, dietetic, and medicinal, of cases of pulmonary tuberculosis. I wish to emphasize the fact that the careful study of each case is of the utmost importance in outlining its treatment. Of equal importance with the medicinal treatment of pulmonary tuberculosis is its hygienic management.

Many years ago, a prominent physician of Boston, recognizing that he had pulmonary tuberculosis, stopped work and drove in a buggy, his wife accompanying him, through the state of Massachusetts, taking a year to do it. He recovered without medication, and reared a family of twelve sturdy children. The diary that he kept on this journey is an interesting medical history. He drove in all sorts of weather, and through a variety of scenes and a diversity of atmosphere that would go to show that climate in and of itself is not of so great importance as sometimes appears. What was the great factor in his recovery? An out-of-door life in pure air. He avoided the cities in his journey, and

he lived a regular life as to meals and the functions of excretion.

The most important factor in the climatic treatment of pulmonary tuberculosis is not the warmth, the dryness, the rarefaction of the air, but its purity, its freedom from extraneous matter of any sort. Given a case of pulmonary tuberculosis in the incipient stage, when the normal resisting powers are not too much encroached upon, and put him in a pure atmosphere, relieved of all worries, and he will get well.

When we have a case that cannot go away, then we should, so far as possible, make a good home climate for him. Make him live out of doors all the time, sitting, driving, or walking as may best be done. Next to the purity of the air, and a factor in producing purity, is sunlight. Let him sit in the sunlight and stay on the sunny side of the street when he walks or drives. Let his room be the sunniest and airiest in the house, and never have it entirely closed up. If possible have it heated by an open fire, and thus procure good ventilation through the chimney. As regards the personal hygiene of the individual, the avenues of excretion should all be kept open to aid in the elimination not only of the normal excreta of the metabolism but also of the poisons generated in the individual as a result of the infection. Recognizing that the normal excretory function of the lung is greatly interfered with by its diseased condition, we must call on the other excretory organs to do its work. Not only the bowels and kidneys, but the skin, which is the greatest sewer of the body, must be kept up to their work. As far as the bowels and the kidneys are concerned, they can be depended upon to do their share of the work if supplied with proper kinds of food and a sufficient amount of water. By the sweats which occur in acute infectious disorders and are followed by amelioration of symptoms more or less persistent according to the disease, nature has pointed out to us that by sweating we can rid the body of many poisonous products. In a limited number of cases,

induced sweating as a means of preventing the drenching night sweats of phthisis seems to have been successful.

As far, then, as the hygiene of the skin is concerned in cases that are up and about, a full hot water bath should be taken once or twice a week, or a hot air or steam bath once a week, given in the late afternoon or evening, and a tepid or cool sponge once a day given in the morning and followed by brisk rubbing; in cases that cannot take this treatment on account of weakness, a tepid sponge bath may be given every afternoon about 5 o'clock and a hot air bath once a week.

As regards the diet of patient suffering with pulmonary tuberculosis, very few general rules can be laid down. The digestive power of each individual has to be studied; there are the greatest varieties from a normal gastric digestion to marked increase in HCl and excessive motility of the stomach, the food being passed into the intestine in altogether too short a time or in the other direction to absolute achylia gastrica and great deficiency of gastric motility.

The foods desirable for these cases are, however, meats, especially rare beef, eggs, baked potato, boiled rice, and boiled young beets; drinks are water, milk (not to be taken at same meal with meat), cocoa and chocolate, and, in moderation, coffee or weak tea. The mouth should be kept clean with an aseptic wash, and the food should be thoroughly masticated.

So far as the respiratory system is concerned, the nose, pharynx, and larynx should be put in good condition and kept so by the use of sprays and douches if needed.

The subject of exercise, both general and special, I have left for consideration by itself, for in this matter especially is it necessary to study each case. If the patient suffers from hectic fever, is expectorating profusely, or is having haemorrhage, even though slight, or if physical examination reveals marked involvement of one or both lungs, general exercises should be interdicted and pulmonary gymnastics

should be tabooed. The danger of too great general exercise is from the fact that the oxygenating surface is too limited to supply the demand. The danger of special pulmonary exercises is the possibility of scattering further through the lung the infecting foci through the process of inspiration pneumonia. Cases in which general exercise and special pulmonary exercises are useful are those in which there is only a slight local bronchitis or very slight pulmonary infiltration.

The medicinal treatment of a case of pulmonary tuberculosis is naturally divided into local and general. The local treatment consists in the application of medicinal agents. The question arises: Can we reach the bronchial and alveolar mucous membrane with medicinal agents in any way to be of value? Evidently sprays and inhalations are our only means; sprays rarely reach beyond the vocal bands, or, at the farthest, the trachea. Inhalation of solutions of medicaments in the fixed oils are of doubtful value, but inhalations of the essential oils seem to reach further and can be kept up almost constantly. Of the various essential oils, the oil of peppermint is by far the best, and seems to have a direct effect in diminishing pus and lessening cough. The cigar-holder inhaler is cheap and efficient.

As for the general medicinal treatment of a case of pulmonary tuberculosis, from the reports of many physicians tuberculin and antitubercle serum have been of undoubted value in early cases. In my own hands they have not as yet been successful. As far as my experience goes, nuclein, administered hypodermically, is the best remedial agency in early cases. I have several cases of apparent cure from this treatment. Among remedies administered by the mouth, creosote or some of its derivatives still stand at the head of the list. In the administration of creosote, it is important in the first place to secure a pure article; to administer it regularly, always after food; to increase the dose gradually, but regularly, carefully watching the urine, as well as looking for gastric disturbance. I have given as much as 2 c. c. at

a dose, three times a day, for three months in this way. The gradual reduction of the dose is as important as the gradual increase, the sudden stopping of the large dose often producing very unpleasant results. The carbonate of creosote has not been of any greater value than the pure creosote, nor has it been better borne by the stomach; the same may be said of the carbonate of guaiacol as compared with guaiacol. In some cases guaiacol can be taken where creosote cannot. When there is a great deal of pus in the sputum, terebene combined with the guaiacol is often of value; balsam of copaiba is also often of great use under similar circumstances. It can be easily administered in emulsion with mucilage of acacia and syrup of tolu. In cases where there is marked intestinal fermentation or gastric intolerance of pure guaiacol, the benzoate of guaiacol is often tolerated and acts very well. It can be given in doses gradually increased from 0.25 to 1 gramme, three times daily, administered in capsules. In all cases where it does not produce gastric or intestinal disturbance, cod liver oil is still our sheet anchor in the medicinal treatment of phthisis; nothing has yet been found which can take its place. The pure oil can be taken by some individuals, but not by many. An emulsion can generally be made that is tolerated by the stomach.

Special symptoms in some cases call for special treatment. I should like to refer briefly to some of these. Pain in the chest is not infrequently a troublesome matter. Its cause should be searched out. If due to pleurisy it should be treated by strapping the chest; if it is a neuralgia it is best relieved by aconitia ointment locally, and the general treatment of the case, building up of the general resisting power; sometimes the local use of iodine in ointment or tincture seems to be of avail, but in such cases it seems to me that time is as much of a factor as the iodine. Cough is a necessary concomitant of pulmonary tuberculosis, and should not be too rashly interfered with. A troublesome, irritating cough, with little or no expectoration, is generally due to pleurisy or some disturbance of the upper air-passages, and

treatment should be directed accordingly. Cough is best treated by inhalations, such as have been suggested, or by the administration of hydrocyanic acid and chloroform water.

The administration of cough mixtures containing stimulating expectorants and opium should be avoided as far as possible. It is very seldom that the stimulating expectorant has any place in the treatment of phthisis, and opium and its derivatives are absolutely out of place, except in advanced cases beyond recovery, in which nothing can take their place. To a patient in advanced phthisis opium is truly the great and good gift of God to men. Haemoptysis is best treated by rest in bed, and the administration of atropine or morphine hypodermically.

The fever of tuberculosis is best treated by the sponging and general plan of treatment already suggested; the use of antipyretics is to be deprecated. Sweats are best combated by the general treatment and the baths and induced sweats referred to, but sometimes call for special treatment. In my hands nothing can equal atropine in the relief of this distressing symptom.

Of the gastric symptoms that require special treatment vomiting is the most distressing. Sometimes it is necessary to put the patient absolutely to bed in such cases. Careful investigation of the stomach with the tube is sometimes of value. In severe cases of vomiting in phthisis, however, whether induced by cough or not, large doses of cerium oxalate, 1 gramme at a time, often give relief.

Of the intestinal symptoms, diarrhoea is the most serious. If the general treatment as outlined does not relieve this condition, benzoate of guaiacol is our most useful drug. In the distressing diarrhoea of advanced phthisis, however, nothing can take the place of the lead and opium pill.

In closing my remarks I wish to make a plea for the careful study of individual cases and the use of treatment especially adapted to each particular case, and the avoidance of routine treatment of cases of pulmonary tuberculosis.

DISCUSSION.

DR. KNOPF said that he had been deeply interested in the paper, as he had long been an earnest advocate of the treatment of phthisical patients at or near home. He did not mean that he did not believe the climatic treatment of tuberculosis to be useful, but simply that the majority of these unfortunates live near the great centres of population and cannot avail themselves of the advantages offered by the favored climates of distant lands. He thought the majority of the tuberculous patients among the poorer classes should be treated in sanatoria situated near the centres of population. Every state should have several such sanatoria with accommodations for the poor. A great deal had been accomplished in Europe along this line of progress.

As to the treatment of cough, he believed that a dry cough was best treated by discipline. At the Falkenstein institution no tuberculous patient was allowed to cough at table, and as a result of this discipline it was surprising how infrequently cough was heard. Tuberculous patients need to be educated both morally and physically. In endeavoring to promote the activity of the skin it was his custom to begin with a dry massage; to follow this first by rubbing with alcohol and then with alcohol and water, and finally to use douches. It was very essential to educate the skin of these individuals so that no undue shock would result. While sunlight was one of the greatest blessings of mankind, he would not like to place his consumptive patients on a veranda exposed to the full rays of the sun. The person's head should be carefully protected from the sun's rays, and if this were not done the individual was liable to suffer from headache. Nothing seemed to him to act as beneficially in pleurisy as the old-fashioned dry cups.

In conclusion, he expressed the hope that the members of the Association would use their influence towards the establishment of special state sanatoria for cases of pulmonary tuberculosis. The expense per diem for such cases in the general hospitals of New York city was \$1.16, whereas the expense in the Adirondack sanitarium of Dr. Trudeau was only \$1 per day. Moreover, in these special sanatoria about 28 per cent. could be cured,—that is, the patient restored to a condition which would enable him to return to his occupation—while in our general hospitals almost no tuberculous patients recover, so that the money spent on them there is virtually thrown away. Ambulant tuberculous patients

should be treated in reception hospitals, and from them should be selected those cases which are likely to be most benefited by treatment in the rural sanitarium.

DR. JOHN M. FARRINGTON, of Broome county, asked what should be done in urgent cases of pulmonary haemorrhage. Some years ago he had been summoned to a sister who was rapidly bleeding to death in that way. He immediately put her under chloroform until she was insensible. In this way, the cough, which was associated with fresh gushes of blood, was checked. After this, she was kept fully under the influence of morphia for hours. In this particular case these measures were required on several different occasions, and the result of this treatment was a prolongation of her life for a number of years.

DR. KNOFF said that when called to a severe case of pulmonary haemorrhage it was his practice to immediately ligate the four extremities, and his experience with this measure had abundantly demonstrated its efficacy.

DR. ROCHESTER, in closing the discussion, said that it was not his intention to advocate sitting in the direct sunlight, but on a covered veranda. His patients, it was true, exhibited evidence of slight shock when cold water was first used, but this soon passed off, and they enjoyed the application. It was certainly true that discipline had much to do with the control of cough. A deputation had been sent from Erie county to the legislature to ask for an appropriation for the purpose of establishing a sanitarium in the Adirondacks. The legislature had declined to do this, but had appropriated money for an investigation by a committee. This committee had decided to report favorably on the proposition, and he hoped that when the matter came up, the members of the State Association would lend their influence towards the consummation of the project. Regarding the treatment of severe pulmonary haemorrhage, he said that he would be afraid to use chloroform in these urgent cases of pulmonary haemorrhage, but he would certainly use morphia, giving one-fourth to one-half grain and repeating the dose until the respirations were brought down to twelve, or even eight, per minute. The common error was to give too small a dose of morphia.

GENITAL NEURALGIA AND THE GENITO-REFLEX PAINS.

By FREDERICK PORTER HAMMOND, M. D., New York County.

October 19, 1898.

So little of concise and accurate knowledge is at hand showing a direct relation between disorders of the female genital organs and derangements of the nervous system, that practical men accept with credulity the conclusions of authors who believe the association here to be more intimate than elsewhere in the organism. In discussing the subject it becomes impossible to strictly confine one's argument to morbid changes in the anatomy alone, for so intimately associated with every phase of genital disease are the peculiar mental states excited through sexual phenomena that this influence must be considered in the production of every symptom.

The proper relation of the nervous system to the various organic functions can only be developed by drawing upon lines of comparison, the relative frequency with which disease is associated with any particular preventive. By such method does it seem demonstrated beyond question that it most commonly appears in connection with genital disorder. Not only does this hold true in any comparison possible, but the manner in which the genital organs perform their function, marks them as having an influence much wider in scope of symptoms than does any other organic function. By comparison there also appear certain characteristics which require the expenditure of a greater amount of nerve energy to sustain them in proper form than is necessary with any other function.

Every office the genital organs are called upon to fulfil is

one of a periodic or epochal nature, interrupting at once the mental and physical state of the animal organism. At the time of puberty the temperament and physical constitution of the female is subject to an entire revolution, while with every recurrence of her periods of ovulation sufficient of the mental and physical symptoms return to cause a marked degree of disturbance throughout the entire system. Ovulation is, however, but one of the offices the genital organs are called upon to fulfil in the economy of sexual life. We may essentially specify eight, and term them the "Genital Crises of Woman," viz.: -

1. The establishment of menstruation at puberty.
2. The menstrual period.
3. Marriage.
4. Pregnancy.
5. Abortion.
6. Parturition.
7. Puerperium.
8. Menopause.

These periods all pertain to the character of the genital function, and mark it as one of particular complexity.

We find still further a peculiarity connected with the genital organs in contradistinction to other regions in that the anatomy or function of those parts having to do with procreation is not essential to animal life. While these are largely instrumental in influencing the course and temperament of individual character, their development and function are largely subservient to the proper maturity of the animal,¹ and throughout the period of continued activity, their condition appears to be largely dependent upon the general economy.

It would seem that from these characteristics of the genital function sufficient pathology may be developed to form a

¹Menstruation should begin when the woman is maturely developed, no matter what the age may be. Increase of size may take place by growth after puberty, but all the organs of the body should be completely developed so far as form and structure are concerned before the function of menstruation is taken up.—"Shene Diseases of Women," 3d edition, 1898.

basis for the etiology of disease without entering in detail upon the minutiae of anatomy. For in our present state of knowledge the anatomy of nerve-supply is not sufficiently understood to show a greater complexity here, than exists in other regions of the body. The only characteristic of nerve-supply to the entire pelvis which is worthy of note is the greater length and size of the trunks, which is made necessary from the bifurcation of the spinal cord at a point above the exit from the trunks from the spinal canal.

Clinical observation does not teach us that nervous disease of genital origin so often depends upon affections of the trunks of direct supply as upon other causes. For while these sometimes become the seat of abnormal sensation, genital nervous disease in its entirety quite as often becomes manifest in remote central ganglia or viscera through various channels of conduction as in any other manner. It is always the sympathetic system which is first to feel the impress of abnormal action, and through the mutual sympathy thus established between one function and another, any disorder becomes transmitted to its centre of greatest attraction. With the genital function in particular this centre is either the central nervous system, or those viscera which by nature more readily respond to stimulus of any nature, such as the heart, stomach, respiratory organs, etc.; or if some organ has become weakened through previous disease it seizes upon this. The disorder having found the most vulnerable points in the system which it can attack, the symptoms which become apparent correspond in every particular with those which appear when they are the primary seat of actual disease.

Rather than enter upon the general discussion of genital nervous disease I shall confine my remarks to the painful sensations which become apparent under the influence of genital function, for it is these disorders which have most possibly impressed me in clinical observation as marking the premonitory stage of a grave and more serious nervous disease. In the greater majority of cases the graver form of

neurasthenia is preceded for a long period by a series of transient and radiating pains in various regions of the body, which yield readily to timely and proper treatment, while in the graver form recovery under the most favorable conditions is a most tedious process.

From their etiology, we may divide the pains of genital origin into two classes. First, as pains in the nerve-trunks of genital supply, or the neuralgias which become apparent in the various components of the genital system.

Pelvic neuralgia proper.—Pains of this order may become excited through mechanical pressure, tension upon the nerve terminals through hyper-pelvic congestion, vaso-motor disturbances in its nutritive supply, or a toxoemia from either chemical or septic infection in the genital tract. Their seat is usually in the ovary, or deeper pelvic structure, or in the deep muscular structure of the inguinal, gluteal, or lower abdominal regions, or they may extend down along the course of the sciatic. Like other neuralgias they are more prevalent in subjects of the gouty or rheumatic diathesis, but may become manifest in the most robust of physiques which suffer from disorder of the genital organs. Not always are such neuralgias of purely genital origin, but, when traceable in their onset to a time when genital disorder first became apparent, or if the pain becomes heightened during a periodic congestion,—and in mild cases it becomes apparent *only* at this time—we may safely conclude it to be of genital origin. This form of neuralgia almost invariably follows a gonorrhoeal infection, though the attack may have been so mild as to have left no other tangible symptoms.

The second form of genital pain seizes upon the spinal and ganglionic nerve-centres, or various centres of the brain, or it becomes manifest as an element of the sympathetic reflex disturbance of the viscera. It is a transmitted impulse, selecting that region of the central nervous system or those viscera, which for reasons before given become centres of attraction for any disorder existing throughout the entire economy. Thus the seat of this form of genital pain is in

the lumbar, dorsal, or upper cervical region, or it becomes manifest as a feeling of weight and pain at the cranial vertex or basal region. In the viscera such pains follow the general law in localization governing the visceral disturbances which become apparent under the influence of pregnancy, or genital disorders of any sort; the ordinary functional disturbance being replaced by pain, or pain is associated with the derangement as its most pronounced symptom. Thus the gastric disturbance becomes a gastric neuralgia, the functional heart derangement has as its most prominent symptom neuralgia in the precordial and left intercostal regions, or through the ramifications of the solar plexus the flatulent disturbances give rise to a multiple series of intestinal pains. The pains of genito-reflex nature may become apparent in any remote organ or region of the body either as a direct reflex disturbance of function acting as an irritant to the sensory filaments of supply in any viscus, or they may be the secondary result of an irritating and altered glandular secretion, as from the hyper-activity and acid gastric secretion we get the familiar heartburn and migraine, or from the acid salivary secretion of pregnancy, caries of the teeth and the familiar neuralgia of the fifth pair.

The genital affections which produce reflex disturbance and pain are the regular physiological congestions and all the minor pelvic affections of the entire genital system, such as the urethral caruncle, urethritis, lacerations of the perineum and cervix, metritis and endometritis, ovaritis and salpingitis, and the milder forms of parametritis. Seldom do we find them in their purest state associated with the major pelvic affections, or if present they become masked by the symptoms of graver form. Plainly all of the minor genital affections are a source of irritation to the filaments of genital supply, and the impulse becomes transmitted and manifest in either the conductor, the nerve centre, or the viscus whose vital powers of resistance are at the lowest ebb.

This second form of genital pain never manifests itself except in subjects where there exists some constitutional

predisposition or a neurosis of the central nervous system. Presumably by far the greater portion of such pains are to be classed among the "hystero-neurosis," for by this we understand not a pathological change in any nerve-tissue, but a functional derangement of the cerebro-spinal axis, characterized by either special mental symptoms, altered sensation, vaso-motor disturbances, visceral disorders, or all of these combined. The pains, therefore, in such a class of disorder are to be regarded as but a symptom of the central neurosis, which is incited to abnormal action through some influence of deranged genital function.

The relation of genital disorders to nervous derangement and pain is most forcibly emphasized from the clinical point of view by reciting in brief a few of the simplest cases I am able to select bearing upon this subject, appending finally such remarks as may seem necessary to more particularly develop the chief features of relationship. I recite these cases not because their history or the clinical phenomena are remarkable, but because they are so typical of our every-day practice, the physicians previously attending them never having applied any genital therapeutics, of which the simplest would have been sufficient to afford relief.

CASE I.—Miss M., aged 17, single, general physique and health good. No hysterical or neurotic tendency apparent. First menstruation occurred at 13, while she was employed as general helper in a laundry. One morning while at work felt warmth about vulva, and upon examination discovered blood upon drawers and herself flowing. Thinking some accident had befallen her, took off drawers and washed them out, replacing them while cold and wet. Saw no further signs of flow, though ill in bed for three days, but did not inform her mother for fear of causing her alarm. With each menstrual period since this time patient has suffered from pronounced prodromal symptoms, of which the chief has been a severe pain extending down along right thigh. These have been so severe as to often incapacitate her for work. Is comparatively free from pain during the intervals between her periods. Has comparatively slight dysmenorrhoea, and one sister menstruates regularly free from pain. Physical

examination made by previous physician, and by myself, reveals uterus in common position, no parametritis or excessive tenderness about vaginal fornices. Patient has been treated for long periods for neuralgia and rheumatic tendency without effect, usually having to resort to morphine hypodermically during paroxysm. When she first came under my observation I practised the same therapeutic measures which had been previously tried, and with the same result, until it seemed to me that the case was probably one of vaso-motor disturbance from the initial exposure at her first menstruation, after which I tried the hot bath (prolonged), and a hot vaginal douche, with the administration internally of viburnum. Beginning this method at the first appearance of pain or prodromal symptoms, before any flow was apparent, the effect was complete relief, and the patient has had recourse to the same means for getting relief at various times ever since its first trial (July, 1895). During several successive periods patient has had to resort to no measures, but ceasing treatment for any length of time the attacks are inclined to recur with increasing severity.

CASE II.—November 3, 1897.—Mrs. T., married, nulliparous, very robust. Family history and social position good. Gives suspicious history of having received mild gonorrhoeal infection shortly after marriage. First menstruation occurred at eleven years, flow five days, dark red in color. Constantly has a moderate pain in right inguinal and lumbar region extending down course of right thigh (sciatic). Pain is heightened and becomes very severe for a few days preceding, during, and after menstrual flow. Has been treated for rheumatism for long periods. Physical examination reveals uterus in common position, relation of body and cervix ante flexion (normal), uterus slightly enlarged, cervix tender, uterine body sensitive to touch, tenderness and slight thickening about right vaginal fornix, and ovary. Treatment applied: Tincture iodine to uterine cavity, vaginal fornix and gauze tamponade wet in boro-glyceride, containing one dram of chloral hydrate to the ounce, this removed in forty-eight hours to be followed by large, hot vaginal douche each night upon retiring. Relief complete, in three weeks, but there has been a tendency to recurrence, yielding, however, promptly to the same therapeutic measures.

CASE III.—Mrs. P., wife of a physician, slightly hysterical, and neurasthenic temperament. Family history tubercular, and

patient never of very robust physique. Some ten years previous to coming under observation was subjected to a difficult instrumental delivery without an aesthetic, from which she sustained an extreme laceration of cervix involving right vaginal fornix. Physical examination reveals very tender and congested cervix, with granulations, cervix drawn to right side by cicatrix of the laceration at vaginal vault, and a large amount of thickened cicatricial tissue is apparent in this region. Adhesions and evident parametritis present all about uterus and entire pelvis, extending in a matted nodular manner clear to inferior border of ribs on right side.

Some four years ago patient developed a tumor in right iliac region with all the accompanying signs of appendicitis. Seen at this time by several prominent surgeons operation for appendicitis was advised, but refused from day to day until rupture occurred with discharge of pus through the genital outlet. As a result of this there has remained exquisite tenderness in this region and about abdomen, and the matting referred to in physical examination probably resulted from this. Patient has developed frequent attacks of colitis, but from time to time is subject to severe paroxysms of pain in right inguinal region,—any attempt at examination per vaginam is sufficient to develop the paroxysm. These paroxysms are of indefinite duration from hours to days, and with their continuance for any period there appear constitutional disturbances with rise of temperature from 99° to 102° . With any physical derangement this same rise of temperature occurs, and patient has developed several slight pulmonary haemorrhages, showing evidently that this is from a tubercular or septic element constantly present. Patient has been coming to me regularly during these paroxysmal attacks of pain for a period of two years. The treatment applied has been tincture of iodine to vaginal fornix and about one dram of the familiar gallo-tannic acid 1-3 applied dry. The effect of this treatment has been complete relief in every instance, within a period of thirty minutes, and with the subsidence of pain the temperature shortly falls to normal, and patient feels perfectly comfortable.

This case forcibly illustrates what an influence is exerted upon the general system through hypercongestion of the pelvis. While from the history we are compelled to acknowledge there is obscurity regarding the exact pelvic and

abdominal conditions with which we have to deal, there can be no doubt but what the paroxysmal attacks are the result of hyperpelvic congestion and trauminal irritability. The rise of temperature follows in natural sequence from the interruption of the stable blood pressure, permitting the tubercular, or toxic, element to gain the ascendancy for a brief time. This patient is aware of her critical condition, and through all inclemencies of weather, and regardless of her physical suffering, leads a most active out-of-door life, riding with her husband and assisting him in a very active medical practice. She has been under the observation of many of the foremost gynaecologists and surgeons in this city, and this simple treatment of the stimulating effect of the tincture of iodine combined with the powerful astringent affords her complete relief, while any more active measures, such as the tampon, etc., which have been repeatedly tried, exaggerate the condition, and internal medication has proved useless.

CASE IV.—Mrs. F., aged thirty-seven years, V-ipara, social station comfortable, pronounced hysterical temperament pervades her entire family, menstruation regular, normal amount and color, duration five days. Has always suffered some dysmenorrhoea, with lumbar and inguinal pain and a feeling of weight at vertex with each period. At first delivery fifteen years previously suffered extensive laceration of perineum, from which has followed pronounced rectocele and cystocele accompanied by constipation and difficult micturition. With advancing time and successive pregnancies patient has gradually been developing more and more pronounced hysterical and neurasthenic symptoms, with all the accompanying pains, until her condition has become such that hysteropileptic seizures are not infrequent, cardiac and gastric disturbances with flatus have appeared, and pains have been constantly present along course of spinal column, most pronounced in lumbar region and in the pericardium. There have been frequent attacks of migraine. Patient has come often to my office for relief of these pains. All symptoms become heightened during menstrual period, and she generally takes to the bed. Physical examination of internal genitals reveals enlarged uterus, with some endometritis and prolapse. Operation September 20, 1893. Curettement and repair

of perineum. The evening following operation, patient developed several of the hystero-epileptic seizures, which were controlled by hypodermic injection of morphine with no return. Patient had a protracted period of recovery before she was able to leave her bed, and for a period of six months did not seem to improve at all, after which she began gradually to regain her normal temperament and physical health. Shortly afterward she became pregnant, and was delivered of healthy child per breech May 20, 1895, a period of twenty months following operation. Has since been delivered a second time, and no return of symptoms have appeared except for a transient appearance of lumbar pain.

I recite this case because it is the usual clinical picture which accompanies the hysterical temperament. The pains, usually the very feature most lightly regarded, appear for a long period before the graver symptoms. In this case they had been present and gradually increasing for many years, and she had tried many different physicians. The source of irritation no doubt was a terminal one existing in the extensive laceration and cicatricial tissue about the perineum, increasing in corresponding degree as the rectocele and cystocele became more pronounced, reaching their climax as the uterus became involved.

In a case operated on in July of the present year the onset was sudden, from an extensive laceration of the cervix involving vaginal vault, due to a difficult instrumental delivery. The symptoms were of a more pronounced nature than in the case recited, and had existed for a period of seven years.

These cases need not to be enlarged upon to illustrate the features of genital influence as the causative agent from which the nervous derangement arises. It is a feature pervading them all that the exact lesion or manner in which the pain is produced is not clear, but in them it is not more obscure than in the pain of any dysmenorrhoea. We have not yet arrived at that perfect understanding of the anatomy and physiology of organic action which reveals the cause of pain when associated with any organic function. Bearing

in mind the fact that it is often through clinical observation that these points are cleared from obscurity, we have reason to recite and enlarge upon our experience with the hope that they will be rendered clear to the interpretation of all. The cases recited are typical in that they are all produced by minor genital lesions. Prof. Hector Treub¹ has particularly drawn attention to this fact in a special paper upon the treatment of pelvic neuralgia. His conclusions in the main are that pelvic neuralgia is never observed prior to puberty, and that it is but a symptom of hysteria induced by states which disturb the pelvic circulation, or augment the ovarian function. With his argument in the main all must agree, but that a pelvic neuralgia alone is always a symptom of hysteria seems rather to preclude the usual problems of neuralgias from mechanical causes, or the known influence of atmospheric conditions or exposure which are particularly permanent with the genital function in general.

The treatment of genital neuralgia, or the reflex disturbances so commonly present in genital disorder, plainly involves measures directed to the general constitution, the central nervous system, and the genital disorder. The hysterical temperament is apparent in both the indolent and the very energetic. Environment must be selected to suit the circumstances of each individual case.

Plainly with the constitutional state the method of procedure is clear to all. For the relief of hysteria or quieting the generally irritable nervous system I know of nothing which surpasses the prolonged hot bath, especially if the patient be a stout, flabby subject. This replaced by the vapor bath and massage if there be a tendency to indolency is advantageous in improving the nutrition and tone of both the superficial nerves and the central nervous system. Cold bathing in genital disorder I believe is almost universally to be condemned, beyond a few brisk spongings of brief duration down along the spinal column, and this only at intervals far removed from the expected menstrual

¹British Gynecol. Journal, November, 1895.

period. The rationale of all hydrotherapy in genital affections is plain. The condition is one of deep pelvic congestion and vascular tension, upon which heat acts as a relaxant and equalizer of the circulation, with superficial dilation. Cold directly per-contrawise is a contractor, and in the supersensitive nerve irritation of the hysterical subject, it exceeds the judicious bounds of stimulation and becomes a direct irritant.

With the local genital affection we are sometimes necessarily in doubt as to whether we have to deal with the condition of hyperaemia of the pelvis or anaemia. Irrespective of whether it be the one or the other, the presence of the tamponade of boro-glyceride by separating the vaginal walls, lifting up and altering the position of the cervix gives relief by releasing the nerve tension. The application of a tamponade in nearly all cases far exceeds any moral influence which can be attributed to it. Then, too, where we have an abnormally irritable nervous temperament, the boro-glyceride tamponade, containing one dram of chloral hydrate to the ounce, is all that is necessary to control the condition. As an astringent for cervical congestions the gallo-tannic acid 1-3 far surpasses any of the metallic astringents, without the dangers of chemical toxæmia, which alone are often sufficient to produce a parametritis of some degree.

For parametritis and adhesions, as well as for metritis, none who have ever tried pelvic mechanical manipulation can ever doubt of its efficacy. Seizing the uterus bimanually and exerting a series of passive motions to and fro may be likened to a series of nerve stretchings; while the effect upon the circulation and nutrition is not unlike the force-pump and exhaust. The mechanical manipulation is best always followed by the tincture of iodine and a boro-glyceride tamponade.

The operative therapeusis of genital nervous affections is confined to plastic surgery, removal of urethral caruncle, evacuation of cysts, curettement, etc. In all plastic operations the essential *per se* is removal of all cicatricial tissue

and careful adjustment of the flaps with a clean line of suture.

It is not to be presumed that all genital neuralgias are to be relieved permanently by simply a resort to genital therapeutics. For admittedly the same constitutional states which predispose to neuralgia in general are elements which contribute a share in producing neuralgias of genital origin. But how many and how exhaustive are the number of such cases which are exaggerated by or find their origin in some terminal irritability of the genital system, one cannot realize who has never practised genital therapeutics for their relief.

I think the neurologists will agree with me in the assertion that neurasthenic exhaustion more often prevails in subjects of a hysterical temperament, and that it is often difficult to discriminate in every case which is the main element to be attacked. Such subjects suffer from cold extremities and a generally lowered vitality greatly at variance with any heart lesion or so-called weak heart. To my mind, the condition is really one of a mild toxæmia of sympathetic origin, resulting from inability to carry off the waste of normal tissue metabolism. In these cases it is the general practice to prescribe strychnine. I cannot agree with such a method, and believe strychnine in a majority of hysterical cases to be directly harmful and a nerve irritant. In caffein sodii salicylate, we have a stimulant, antitoxæmic solvent and eliminant, which is all that can be desired. Given in two or three grain doses every two or three hours, till the effect is produced and then diminished in frequency to thrice daily, it can be continued as long as desired until the other measures shall have taken effect.

BIBLIOGRAPHY.

- Hart and Barbour's Manual of Gynaecology.
- Diseases of Women, Thomas & Munde.
- Playfair's System of Midwifery.
- International Medical Annual, 1896, p. 429, "Nervous Disorders of Women," Thos. Moore-Madden. Dublin.

American System of Gynaecology: Hystero Neuroses, by Geo. F. Engelsman, St. Louis.

Foster's Physiology.

Carpenter's Physiology.

Pepper's System of Medicine.

Operative Gynaecology, Kelly of Baltimore, 1898.

Diseases of Women, Skene, 1898.

DIAGNOSIS AND THERAPEUSIS.

By H. D. DIDAMA, M. D., of Onondaga County.

October 18, 1898.

It is well to keep in mind that therapeutics is the capstone of the medical edifice, the fruitage of the tree of medical knowledge and practice.

Anatomy is a cold-blooded description of structure. Physiology tells how structure behaves when it is healthy, and pathology, when it is n't. Diagnosis is a careful attempt to find out exactly where the mutation from physiology to pathology is located; and aetiology is a knowledge, or surmise, as to what evil agent produced the mutation. These are the foundation stones,—the brick and mortar in the body of the medical building, the roots and branches of the medical tree.

In and of themselves they are practically useless—the * sounding brass and tinkling cymbals of science. But indissolubly connected with a well-founded therapeusis, they are of inestimable value.

This seems evident enough. Yet there are some very worthy and eminent men in the profession, notably those whose business is confined to office practice, who assert, with great vehemence, that it is of no importance what the superstructure of an edifice may be, so long as the foundation is strong and the corner-stone in position; that, if the tree be of goodly appearance and perfect in body and branch, it is all one whether it be barren or bear apples of Sodom or fruit for the healing of the nations. But the high-toned, all-round physician, if jealous for the honor of his profession, who practises his art, not for revenue only, not for the ducats he can extract for himself, but for the good he can do

his patients, has the assurance of faith in scientific, progressive therapeutics.

Hygiene is exceedingly valuable. It is the medicine of the future. It always will be so long as men and women are not omniscient—no, not that, for omniscience would be of little value to those who do not exercise the feeble wisdom they already possess.

“ Happy little Mary Wood
Always did the best she could.”

But big Mary Wood did n't. She would n't. She wore corsets warranted to make her an inch smaller than any other corset in the world. She crowded her shapely number seven feet into number five high-heeled shoes, and went crippling around with rings on her fingers and corns on her toes all the rest of her fashionable life.

Hygiene is no good for the army of this kind of Marys, nor for the men who not only know that their vicious habits will bring rottenness into their own flesh and bones—a personal matter of no great consequence to the world—but know also that their sins will be visited upon their innocent offspring to the third and fourth generation.

Hygiene is for those who are inclined to do right and avoid the wrong, and who sin through ignorance. Still, in spite of us all, hygiene will remain the science of the future.

* * *

This is introductory to a few miscellaneous memoranda, illustrating the value of diagnosis and how it was made, and the crowning importance of therapeutics.

I.—COLD DESTROYERS.

A hot whiskey sling, to be taken at bedtime, is frequently prescribed (as some of us may know) and joyfully employed to break up a cold.

Sleep and profuse perspiration are induced by the heat and alcoholic sedative, but the patient is likely to awaken with a severe headache.

Now the sling known as imperial, made by dissolving a teaspoonful of cream of tartar in a glass of boiling water, sweetened to the taste, is equally effective in securing free diaphoresis without the drawback of a morning cephalalgia.

And then if the sufferer in subsequent attacks takes this medicine without the physician's order, or even if he resorts to it as a preventive, he runs no risk of forming a pernicious habit.

It becomes us in selecting remedies to consider whether in their far-reaching outcome they are not prone to establish a malady worse than the trouble for which they were prescribed.

II.—ULCUS VACUUS.

Indolent ulcers on the leg, even when quite large, deep, and numerous, may be treated very successfully by painting with tincture of iodine, filling to the surface of surrounding skin with sub-nitrate of bismuth, strapping with slitted strips of adhesive plaster extending almost around the limb, covering the strips with clean cotton to absorb any pus which might ooze through the slits, and then bandaging snugly from the feet up above the sores, the bandages to be made of thick, elastic flannel.

The dressing is to be renewed daily after washing the affected parts with soap and water. Marked improvement in the appearance of the parts is usually manifest at the first dressing, and granulations soon spring up and fill the ulcers. Laboring men who are afflicted with this distressing complaint are permitted to continue their work as usual. Rubber-webbing bandages may be used after the sores are healed—not the black rubber which keeps the parts wet; and when varicose veins are present the elastic stockings may be worn permanently if needed.

III.—A SINGULAR CASE OF PSORIASIS.

Mr. W. P., who had seen his sixtieth birthday, called at my office several years ago at the urgent solicitation of friends. He was a resident of H——, in Madison county. For fifteen years

he had been under treatment for a spinal disease which caused so much suffering that morphine was administered every day and sometimes three times a day. For the last five years numerous round, elevated patches of psoriasis, varying in size from half an inch to an inch and a half in diameter, had appeared on his limbs and other portions of his body. The intense itching and burning of these patches, especially at night, made life itself almost insupportable. His naturally cheerful disposition had changed to such a savage moroseness that his neighbors often crossed the street to avoid meeting him. To obtain relief from the intolerable itching so that a little sleep might be secured, every second night he sliced off the thick scabs to the level of the skin. Some blood and much smarting followed these operations, but the smarting subsided after an hour or more, and a fairly comfortable rest followed. All the ointments and soaps, soothing and irritating, which had been commended proved on trial utterly useless.

After a thorough examination of the broken-down and hopeless old gentleman, who had been assured by eminent authority that these great itching crusts were of such benefit and necessity to him that if they could and should be cured he would not survive a single month, the confident statement was made to him that if he ever had any spinal disease it no longer existed, and that the psoriasis, with all its attendant mental and physical misery, was the outcome of the morphine habit which resulted from the treatment of his supposed disease.

A favorable prognosis was made, conditioned on his strict compliance with all orders prescribed.

A week was given him in which to give up entirely and perpetually the use of the drug which he had employed constantly for fifteen years. Tonics, such as iron, arsenic, and strychnine, with lupulin and other sedatives, were administered and galvanism was applied. In less than a week the morphine was entirely withdrawn; the itching had so subsided that cutting off the crusts was no longer necessary to secure sleep; and the mental condition had markedly improved. In six weeks the psoriasis-crusts had disappeared, and the immense improvement of the patient was so obvious that his family and some of his religious neighbors did not hesitate to express their belief that the restoration to his long-lost normal condition was little if any less than miraculous. And yet the only miracle in the case consisted in inspiring in the mind of the patient such a conviction that the cause of his suffering had been discovered and that relief might be expected,

that he gracefully yielded to the prescriptions and the proscriptions of his medical attendant.

But a single similar case and where the psoriasis was the result of a denied opium habit has since come under my observation. An emphatic proscription and prompt discontinuance of the use of the drug resulted in speedy recovery. (This patient, I am sorry to relate, was a lady.)

IV.—URINE SEDIMENTATION. A PROFITABLE SCARE.

There is of late a renewal of advertisements in the newspapers stating that a sediment found in urine which has stood a few hours is a certain indication of Bright's disease, which, of course, can be cured only by the free use of a newly discovered kidneyine.

Multitudes of the dear people void their morning urine into a goblet and subject it to an anxious and critical inspection. To their horror, they find in the goblet, after a suitable waiting, more or less of a sediment, cloudy in appearance, to be sure, but clear enough in its deadly forebodings.

Many of the victims of the insidious complaint hasten to the nearest pharmacy and procure a supply of the genuine, safe, and infallible kidneyine.

A few alarmed but cautious individuals report the results of their investigations to the intelligent family physician and are comforted by his assurance, after an examination of the specimen presented, that there is no kidney or other disease present, and that if they had drank a glass of water at bed time, as he himself always does, and everybody should, the waste material, which is formed at night as well as in the day, would have been held in solution and no sediment would have appeared.

Those who take the kidneyine with an abundance of water hasten to furnish certificates that, after enduring, as the sediment demonstrated, the worst form of Bright's disease for an unknown period, they had been entirely cured, as the absence of the sediment proved, by a single bottle of this miraculous

remedy, but that they should continue its use for a long time to guard against a possible deadly relapse. And they are not only willing but anxious to have their affidavits and large size photographs displayed in the newspapers.

V.—A CURIOUS CASE OF CONSTIPATION.

Sixteen years ago this spring, my friend, Dr. E. of Chittenango, invited me to visit in consultation a patient of his, Mrs. L., a lady of forty odd summers. When fifteen years old she had an alarming attack of typhoid fever with a prolonged and tedious convalescence. After this she had a severe fall which injured her back, and occasioned agonizing headaches and attacks of prolonged delirium. Obstinate constipation supervened which, for quite a long period, yielded to active cathartics. These at length seemed ineffectual so that at the time of my visit the intervals between movements of her bowels were from two to four weeks, although she retained and gratified a good appetite. Every day or two she visited the closet and made straining and persistent efforts to secure a free passage, but with so little success that only a tablespoonful of mucus tinged with blood ever made its appearance. Her digestion seemed undisturbed as was indicated by her becoming more and more fleshy.

A pretty constant bloody vaginal discharge called for an examination, and this resulted in the discovery of a greatly enlarged uterus which we thought might be of a malignant nature and the mechanical cause of the constipation. A rectal exploration, however, showed that there was a stricture of the colon just above the rectum which interfered with the passage of a small bougie.

Under ether, graduated bulb-dilators were introduced and a large glycerine enema was employed with such success that fair but gradually diminishing movements continued for several days when occlusion recurred and persisted for two or three weeks. Then a successful resort was again had to the ether, the bulbs, and the enema. This course was followed for a pretty long period, the doctor employing the bulbs under ether eighteen times and several times without ether. On one occasion when there had been no movement for four weeks the use of the dilators and repeated enemas was an utter failure. After waiting two weeks longer the doctor kindly requested me to come to his assistance. The anaesthetic was administered, dilation accomplished, and a

mammoth enema introduced, containing, among other active laxatives, eight ounces of glycerine.

While waiting at the tea-table in an adjoining room for the effect of the ether to pass away, we were hastily summoned by the nurse to the bed-side where we discovered that something besides the ether had passed away and that the patient was floating in the liquefied accumulation of six complete weeks of a full diet. A course of efficient tonic cathartics was instituted and continued for a long period with no return of the stricture.

I have only to add that the uterus returned to its normal size, showing that the constipation was the cause and not the effect of the great enlargement.

VI.—A SOLUBLE MYSTERY.

The proprietor of a celebrated spring in New England claims that as the most careful chemic and microscopic examinations fail to discover the minutest quantity of vegetable, animal, or mineral material in the water, its undeniable and universally acknowledged potency must be owing to some mysterious principle. The salutary manifestation of this principle, he assures his visitors, is proportioned to the quantity of the water imbibed.

While three pints a day scarcely disturb the quiet dreams of the healing mystery, six quarts rouse the giant powers of the panacea and it sweeps away all rheumatic, cystic, and hemic enemies, with the besom of destruction. . . .

And yet there are many people of average intelligence who, while freely admitting that large potations of this remarkable fountain are sometimes of astonishing efficacy, still hesitate to express a belief in the existence of any mysterious remedial power.

And alas! there are scientific scoffers who brazenly liken the circulation in the human body to a street sewer which dribblets of water merely moisten while floods thoroughly flush and cleanse.

VII.—GRATITUDE REPRESSED.

Some years ago, a spare, six-feet-four man entered my consulting room, when his turn came, and asked somewhat abruptly:

"Do you pretend to cure cancer of the stomach?"

"No."

"I've been watching you for half an hour as you came into the front office, and you don't look like that kind of a man."

"Who has cancer of the stomach?"

"I have."

"You don't look like that kind of a man."

"But the best doctors in Cortland and Oneida counties say I *have*. Do you know Dr. H. of Cortland county?"

"Yes, he is a warm friend of mine."

"Good doctor?"

"One of the best."

"Well, he examined me three years ago, and told me I had cancer."

"Possibly *I* might have told you so then; but now I say you have n't. You don't look like it, and a cancer ought to have killed you before this time."

"Well, at any rate, I have vomited every particle of food I have eaten in three years."

"I think this is no nearer the truth than your other assertion about having a cancer. Dr. Tanner pretended to live forty days without food, and we have serious doubts, but three years' total abstinence would have killed you with starvation. A little of your food must have been retained at each meal. Now, as vomiting is neither useful nor agreeable, why not take just the little you retain and no more?"

On examination, the pyloric end of the stomach was found enlarged and indurated but only slightly tender. The poor man had been suffering with an ulcer at the gastric outlet all these years, and had given it no opportunity to heal by resting.

I did not use lavage for diagnosis or treatment. It was entirely unnecessary for the former purpose, and it seemed as uncalled for as a therapeutic measure then as it does in the majority of cases where it is employed to-day.

I ordered making the stomach thoroughly alkaline once,

at least, daily by the use of sodium bicarbonate; and prescribed frequent doses of bismuth subnitrate.

I directed the patient to begin his reformed dietary by taking a teaspoonful of milk every twenty minutes and increasing the quantity and the length of the intervals gradually to a tablespoonful every half hour, a gill every hour, and so on; dropping back to the smaller quantity on the first appearance of vomiting.

At the end of six weeks I received my first and only letter from him. "I have not vomited since I left your office. I am taking four quarts of milk a day. I have gained nine pounds in the last ten days."

This case also illustrates the importance of correct diagnosis and the crowning glory of suitable therapeusis.

A sequel to this case may be amusing if not instructive. Three years after receiving the letter from the patient, I had a personal call from him. He was in perfect health. You can imagine with what fervor he clasped me in his strong, grateful arms and declared, with an emotion which he did not attempt to conceal, that he owed me health, happiness, and even life itself.

But, in reality, he did nothing of the kind. He exhibited no emotion; he expressed never a thank; he kept his hands in his pockets. He simply said that as he was visiting our county fair he thought he would run in a moment to let me see him.

A month later, a poor, emaciated wretch, assisted by his wife, slowly crawled up my front steps and dropped into a hall chair. He seemed in great distress. He said:

"Mr. S. of Cortland sent me to see you."

"I remember him. He was a patient of mine."

"He told me so, and said I had the same disease he had, and he could cure me."

"Ah, S. has become a doctor, has he?"

"No, he said he wa'n't no doctor but he knew what cured him."

"What was it that cured him?"

"Milk."

"Well, milk did have something to do with it. How much did he tell you to begin with?"

"Four quarts."

"I see, S. wished you to begin where he left off. Did you do it?"

"No, I couldn't. I was all the forenoon trying to swallow a pint. I couldn't get it down. It hurt me so I tried to vomit but I couldn't. I strained and strained and thought I should die. I sent for Mr. S. and he told me to come here right away, for he guessed there was something in my case he did not understand."

I found a contracted oesophagus which admitted only a number 7 catheter, and required a whole fortnight's gradual dilation at the hospital before the finest kind of hash could be swallowed.

Here again, intelligent diagnosis and therapeusis were useful co-partners.

The good Mr. S. undoubtedly thought that I had practised some imposition on him in ordering slowly increasing portions of milk when I must have known that a gallon a day would have made him a strong and well man at once. No wonder that he did not overwhelm me with gratitude!

VIII.—URETHRAL CARUNCLES.

These painful neoplasms are still treated by some practitioners with caustic and cautery. A method much more satisfactory to doctor and patient is to inject into the growth, through a very fine hypodermic needle, a 4 per cent. solution of cocaine. This will secure anaesthesia not only of the sensitive neoplasm but of the surrounding parts, so that with delicate scissors a painless removal of the caruncle and a thin layer of adjacent mucosa can be effected.

IX.—EPISTAXIS.

Nose bleed, in many instances, can be arrested by the administration of opium. This has succeeded so well, even after the failure of astringent injections and plugging the

nostrils, that the writer has had no occasion to employ any other treatment for more than thirty years. The dose for an adult has been a grain or more, repeated if necessary in two or three hours. But the repetition seldom has been needed.

X.—BRONCHIECTASIS.

It was a warm day early in the summer of 1892 when I visited Mrs. H. of C., who was suffering from a disease which had been named by the attending somewhat irregular physician, cancer of the lungs and stomach, and by a competent consultant, gangrene of these organs. I found the patient, a lady on the bright side of forty years, lying in bed with flushed cheeks and a distressing cough attended with an expectoration, whose intolerable fetor spread far out through the doors and windows which were kept open night and day.

I learned the history of the case. Hectic symptoms had existed for several weeks preceded by a cough which had troubled her for many months.

This cough had become quite constant and offensive the greater part of the day and night, but was not very violent. Two or three times daily, however, there would be paroxysms lasting from thirty minutes to two hours when the cough would be incessant and attended with a profuse discharge of fetid pus from the lungs and still more fetid from the stomach. The violence of the paroxysm would subside at length, and the exhausted patient would have an interval of comparative ease. Profuse bronchial haemorrhage had occurred several times, but emaciation was not extreme.

There was some circumscribed dullness in the left infra-axillary region with abundant coarse râles. There was no tenderness in the gastric region, and the patient informed me that the little food which she ate did not cause distress. She never vomited except when she had the coughing paroxysms. Her stools were of normal odor and entirely free from the loathsome smell of what she vomited.

The diagnosis of the case was now comparatively easy. (Subsequent history strongly indicates that a local tubercular deposit was present at this time.) I took the patient into my confidence and talked to her after this manner:

"You have no disease whatever of your stomach, and you have no cancer or gangrene anywhere. You have what doctors call bronchiectasis; that is, in one of the tubes of your left lung a pocket has been formed which holds half a teacupful or more. This pocket has thick walls so that it is not easily compressed. Once or twice a day or oftener it becomes filled and running over with this horrible stuff which is not only unfragrant but very irritating. Its overflow excites the violent fits of coughing, which continue till the cup is partially emptied. The odor sickens you so that you vomit, and the vomiting helps mechanically to empty the pocket. What comes from your stomach has no bad odor, but it seems to you that it has because it is mixed with the disgusting contents of the cup.

"If there was any disease of the stomach, the smell from the passages of your bowels instead of being natural would have been strong enough to drive the dog we hear so much about out of a tanyard."

Then I explained to her what I have already published, how she could empty this dreadful cup in five minutes by putting her hand upon the floor as she was lying on the bed and bringing her head nearly to the same position, thus turning the cup bottom side up and coughing down hill before the hard fits came on, instead of coughing her head off for an hour and a half.

Improvement, the loss of odor, the mitigation of cough, the cessation of vomiting, took place speedily. Suspicious dullness, however, remained, and haemorrhages have occurred several times within the last six years. At present, although she still persists in taking tonics and tablets of cubebs, copaiba, iron and Venice turpentine, she declares, and her robust looks verify her statement, that she is the healthiest woman in her village.

CASE OF FISTULOUS OPENING BETWEEN THE
ILEUM AND THE FUNDUS OF THE BLAD-
DER OF FOURTEEN YEARS' DURATION.
LAPAROTOMY, CLOSURE OF THE
OPENINGS BY SUTURE AND OF
THE ABDOMINAL WALL WITH-
OUT DRAINAGE. PRIMARY
UNION WITH CURE.

By H. O. MARCY, M. D., of Boston, Mass,

October 18, 1898.

Mrs. L., aged 40, was a strong, healthy girl. Menstruated at thirteen, regular until twenty-two. Married at twenty-one. Never pregnant. Menstruation irregular, at times wanting for several months. Consulted me because of sterility three years after her marriage. A small, movable uterus with a very long conical cervix. No evidence of ovarian disease. Never seriously ill until twenty-six years old, then following undue exercise in the country was suddenly seized with very acute pain in the region of the left ovary. Diagnosis acute peritonitis. Was under the care of Dr. Norwood of Spencer, Mass. Considered dangerously ill; in bed three weeks. About the end of the second week felt something give away in the abdomen. Soon after passed by the urethra a considerable quantity of thin, yellowish matter, accompanied by the escape of a little gas. Made a slow and imperfect recovery. In Mexico the following winter was distinctively worse, and in a number of instances passed a very dark colored fluid from the urethra, associated with what was believed to be the minute seeds of certain fruits. Since this period has never menstruated. At times been confined in bed with attacks of acute cystitis. For the most part has been able to share in household and social duties, but never entirely free from pelvic discomfort. Oftentimes under the care of various physicians; bladder irrigated, etc. Not seldom gas has passed at micturition and the patient firmly believed

that there was an abnormal connection between the intestine and the bladder.

Admitted to hospital March 29th, 1898. General vigor not seriously impaired. In good flesh, slightly anaemic; no other organic disease. Was just recovering from a somewhat acute attack of cystitis. Micturition rather frequent and painful. Urine in normal quantity and specific gravity, acid, slight trace of albumen, and distinctively tinged with bile-pigment. Pus-cells abundant. A few minute fragments of muscle, bits of the hulls of oat-meal, and cellular shreds from the orange, starch cells, etc.

Following the eating of strawberries, a considerable number of strawberry seeds escaped with the urine, drawn by a catheter. No milk found in the urine, following its high injection through a long, rectal tube. The uterus is small and movable, but to the left in the region of the ovary there is a slight enlargement, somewhat tender upon pressure. Cystoscopic examination of the bladder showed the bladder-wall of increased capillary vascularity, but otherwise without marked change, except at the fundus, where there was an irregular opening surrounded by a deeply injected area. I was enabled to carry a sound easily through the opening for an inch or more, thus establishing clearly the diagnosis of a vesico-intestinal fistula. The presence of the biliary pigment together with the incompleting digestion of the intestinal contents indicated that the portion of the intestine involved was above the ileo-caecal valve. After a consultation with Dr. William H. Baker of Boston and Dr. F. L. Thayer of Newton, the family physician, advised surgical interference.

Operation April 5th, 1898, assisted by Dr. Thayer. The bladder, the uterus, the left ovary, and about six inches of the small intestine were fused in a common mass by vascular adhesions. These were separated with much difficulty. The left ovary and tube were removed, the ovary the size of a small egg, the tube distorted and thickened and evidently the primary seat of the disease, resulting in an abscess which opened after the formation of adhesions, into the intestine and bladder. The opening in the ileum was about one third of an inch in diameter, and about eight inches from the ileo-caecal juncture. The opening into the bladder was much smaller, perhaps half as large, of a somewhat valvular form, which explained the reason why the urine did not pass upward into the intestine. After refreshing the edges, I closed the openings independently by double continuous tendon-sutures. Over these I intrafolded the peritoneum by a single, fine, continuous

parallel tendon-suture. Then carefully closed the abraded peritoneal rents in a similar manner. Closed the abdominal wound by independent layers of sutures, and sealed with iodoform colloidion without drainage. The bladder was drained by a retention catheter for several days and occasionally washed out with a boracic acid solution. The patient made an easy recovery, the urine for the most part rapidly cleared up, and no further gas was passed by the urethra.

October 16, examined patient. She spent the summer at the seaside; is greatly improved, although general health is not entirely restored. Slight cystitis yet remains.

In this connection a previously reported case is worthy of mention :

A healthy child of eighteen months was taken acutely ill, temperature soon reaching 105°. Developed a small tumor in the right iliac region, probably appendiceal. Tender to the touch; skin slightly reddened and infiltrated. This opened spontaneously, followed by a free escape of faeces and urine. I made a free dissection, separated numerous adhesions which had fixed the intestine and bladder to the surrounding parts. Closed two openings in the intestine which admitted the end of the finger and closed the opening in the fundus of the bladder, about one third of an inch in diameter, using tendon sutures in the manner already described. The patient made a rapid recovery, and is now a healthy, well-grown girl.

The subject is interesting, especially because of its rarity and oftentimes difficulty of diagnosis. Openings from the bladder into the rectum are not so very uncommon. An interesting symptom is the passage of gas by the urethra pneumaturia.¹ It is well to remember that this may occur from mechanical reasons, and also because of the development of some organism in the urinary tract which produces gas. Pelvic fistulae may occur from a variety of pathologic conditions, as for example, cancer, abscesses of the reproductive organs in woman; calculi, urèthral stricture, prostatic disease, etc., in the male. Anatomically there appears to

¹ See interesting article by Drs. Kelley and MacCullum of Baltimore, Journal of American Medical Association, August 20, 1898.

be no special reason why the small intestine may not be involved, as the seat of a fistulous tract. But after a somewhat careful research of the literature of the subject, I have failed to find a single case where operative measures have been attempted.

In the paper above referred to, Dr. Kelley reports a case of fistulous opening between the sigmoid flexure of the colon and the left vertex of the bladder. After a careful dissection the vesical orifice was closed by means of interrupted catgut sutures, the opening into the bowel by interrupted silk sutures, the patient making a perfect recovery. In the second case, where the opening was between the rectum and the base of the bladder, the openings were closed by two rows of "matrass" sutures. "The patient did well for twenty-four hours, but her weakness was such that she succumbed. There was no peritonitis or haemorrhage." Six years before she had been operated upon for a tubo-ovarian cyst.

At the last meeting of the American Surgical Association, Dr. W. W. Keen of Philadelphia read a paper entitled, "Case of Appendicitis in which the Appendix became Permanently Soldered to the Bladder, producing a Urinary-Faecal Fistula." He had been twice operated upon; at the last operation making an artificial anus. At a third operation it was found that a very long appendix dipped into the pelvis, the tip lying just behind the prostate and solidly incorporated into the wall of the bladder. This was separated from its intestinal attachment, and the distal end of the appendix, covered by a fold of peritoneum, was allowed to remain. The patient subsequently died after leaving the hospital, following a fourth operation for the closure of the artificial anus. A mesenteric band had produced intestinal obstruction.

DISCUSSION.

DR. MARCY then exhibited a vesical calculus which was of interest because of its attachment to the posterior and upper border of the bladder. He also showed a collection of nine hundred and

seventy-two gall-stones, which he had recently removed by operation from one person. Their total weight was one thousand grains.

DR. FREDERICK HOLME WIGGIN, of New York county, presented two large abdominal tumors, one a fibromyoma and the other a calcified fibroma. The first one was a large retroperitoneal tumor which he had removed by operation last July from a woman. It was of interest on account of its size (weighing twenty pounds) and rarity. Out of about two thousand abdominal tumors at the Carnegie Laboratory, nothing just like this one had been found. According to the history, it had not been noticed until about eighteen months ago. She vomited constantly for some time before the operation. About six weeks before coming under his observation an exploratory operation had been done by another surgeon, but no attempt had been made to remove the tumor. The patient was suffering greatly from the pressure produced by the growth, and she was willing to accept the risk involved in the attempt to remove it. The initial incision extended from the ensiform cartilage nearly to the pubes. On passing the hand behind the tumor he had found that it was not adherent, and he then experienced little or no difficulty in its extirpation. The previous exploratory incision had been made low down, and the operator, finding the intestine adherent in front, had supposed the case to be inoperable. The pedicle arose very close to the mesentery. The growth proved, on examination, to be a fibromyoma, which had undergone some degeneration, but not of a malignant nature. The pathologist thought the growth had had some connection with the intestine. The operation did not occupy much more than twenty minutes; the patient took very little ether, and the wound healed by primary union. Three weeks later she passed from under his care. At this time she was doing nicely. He learned subsequently that about six weeks after the operation the vomiting had returned and she had died shortly afterward. The post-mortem examination showed that death was due to nephritis.

The calcified fibroma weighed seventeen pounds, and had been removed two weeks previously from a woman, forty-one years of age. According to the history, it had been growing for many years. The growth sprung from the anterior wall of the uterus. In cutting it out he opened two large sinuses, and while endeavouring to control the profuse haemorrhage he accidentally

cut across a large portion of the base of the bladder and also cut the bladder low down on the right side. The opening in the floor of the bladder was sutured from the inside with catgut, with the idea that the swelling of the catgut would prevent leakage. A large flap of peritoneum from the tumor was used to cover over the injured portion of the bladder, thus making the whole extra-peritoneal. A catheter was retained in the bladder for twenty-four hours, and after that the urine was drawn every three hours. About ten days after the operation, the lower angle of the wound gave way and some urine escaped. A self-retaining catheter was then inserted, and, at the present time, the discharge had practically ceased, she was passing urine freely, and was making a satisfactory convalescence.

TUBERCULOSIS OF THE MIDDLE EAR.

By SEYMOUR OPPENHEIMER, M. D., of New York County.

October 18, 1898.

A few years ago, Voltolini¹ first called attention to the tuberculous nature of certain morbid processes existing in the middle ear of otherwise healthy individuals. Previous to the discovery of the significance of the tubercle bacilli as a pathogenic factor in tubercular processes, these middle-ear affections presented no unusual features and were treated as non-tuberculous affections. The universality of the tubercle bacilli, its presence in all locations inhabited by man, and its liability to produce morbid changes in all the tissues of the body, render a study of tuberculosis always of paramount interest. Not only do the tissues of the viscera suffer from the ravages of this affection, but the special organs, particularly the eye, are constantly involved by the tubercular changes common to the disease. The auditory apparatus is much less frequently the seat of the affection, but when the middle ear becomes infected with the tubercle bacilli, not only do local changes destroying the auditory apparatus take place, but destruction of the adjoining tissues occurs and life itself is threatened because of the highly important parts reached by the morbid process.

Tuberculosis of the middle ear may be primary or secondary, the primary form being very rarely observed and then from the extreme difficulty of eliminating the presence of tubercular deposits in other portions of the economy, it becomes a matter of hesitancy to decide as to the accuracy of the diagnosis. The obvious difficulties incident to the localization of a primary deposit of tubercle bacilli precludes

¹ Voltolini, *Monatschrift für Chrenheilkunde*, XVIII.

a study of its aetiology here, as it seems impossible to find a true case reported with sufficient evidence to warrant the title. The secondary involvement of the ear, the tympanic cavity being practically the first portion of the aural chambers to be affected, has hitherto been considered as occurring quite rarely, but recent investigation has given enough evidence to warrant the statement that tuberculosis of the middle ear is much more frequently a complication of the affection in other portions of the body than is generally supposed.

In the lower animals, especially in guinea pigs, tuberculosis of the middle ear, both primary and secondary, is more or less frequent. In the experimental production of tuberculosis in these animals, the middle ear is the part involved in numerous instances. One reason for the seeming neglect of the study of the tympanic cavity in the tubercular process, is the comparatively small area involved, as compared with the serious visceral or general effects of the disease; and usually by the time the ear is attacked the pulmonary or visceral involvement is of such paramount gravity that the aural phenomena become insignificant.

The tubercle bacilli may be conveyed to the ear in three ways: first, through the Eustachian tube; second, by the blood vessels and lymphatic system; and finally, from the external auditory canal through a previously or newly formed perforation in the membrana tympani. The two latter methods of infection are relatively infrequent, and will not here be considered, as they present no features differing essentially from infection through the tube. In practically all cases of tubercular infection of the tympanic cavity, the contagium is conveyed to the part designated *via* the Eustachian tube, therefore a study of this route will enable one to sufficiently appreciate the changes in this locality.

Before the ear becomes involved, the vault of the pharynx undergoes tubercular change, commencing with an inflammatory condition, with soft swelling of the adenoid tissue and mucous membrane and subsequent cheesy degeneration

of the lymphatic glands in the immediate neighborhood; from here the infection is conveyed to the tympanic cavity by the ciliated epithelium of the Eustachian tube, infecting this canal at various points along its course.

As the *pars tympanica* become involved, proliferation begins, rapidly followed by the appearance of small, gray tuberculous nodules in the inflamed and swollen parts, constituting the so-called tuberculous osteomyelitis of the *pars tympanica*.¹ During the progress of the mucus containing the tubercle bacilli along the Eustachian tube, various prominent points become infected and typical tubercular changes take place. The most characteristic signs of the disease are found at the ostium tympanicum and at the isthmus; this preference, as it were, for these portions of the tube can be explained by the movements of the ciliated epithelium carrying the infective material outwards from the pharynx to the middle ear, the isthmus, from its projecting into the lumen of the tube, acting as a resting-place for portions of the mucus, while the entrance of the tube into the tympanic cavity affords still more of an irregular surface, and therefore is more liable to suffer from the infecting material remaining in the inequalities of the mucous membrane.

Shortly after the *pars tympanica* becomes the seat of the tubercular process, small, miliary nodules occur in the inflamed lining mucous membrane of the tympanic cavity. The tubercular formations arising from the miliary tubercles increase in size and gradually encroach upon the limited space of the middle ear, finally filling up this cavity, destroying the mucous membrane and dislocating the ossicles, which in a short time become necrosed. The entire *pars tympanica* is converted into new growths and the disease begins to involve the adjacent bony walls and the antrum. Extensive destruction taking place, the mastoid and internal ear is destroyed, or else the patient succumbs to the general tuberculosis present. At an early period the disease invades the Eustachian canal, destroying its bony wall and deposit-

¹ Burnett, Diseases of the Ear.

ing tubercular nodules in the interstitial connective tissue of the facial nerve, separating the nerve into its component fasciculi and destroying it. The inner ear being destroyed, the disease progresses until brain involvement takes place.

Aural tuberculosis may occur at any age, from childhood to advanced life; but the comparatively mild cases, where there is no evidence of general infection but simply associated with glandular enlargements and the so-called strumous diathesis, occur most frequently between the age of two and twelve years.

From recent studies of the tympanic cavity in tubercular individuals, authorities have become more and more convinced that this organ is involved in a greater number of cases than was commonly supposed. Habermann¹ found tubercle bacilli in purulent discharge from the middle ear in five out of twenty-four individuals, all of whom finally succumbed to tuberculosis; while Nathan² found the tubercle bacilli present in twelve out of forty cases. In all but three of the cases in which this micro-organism was discovered there were present marked evidences of pulmonary tuberculosis; in the three cases presenting no evidences of general tuberculosis, carious degeneration of the bone of the tympanic cavity had progressed to a considerable degree.

Impairment of hearing in tuberculous subjects, with or without physical evidences of middle-ear infection, has been found present in twenty-eight cases out of two hundred and ninety-four, thus making a percentage of two and four tenths, as the average of infection of the auditory apparatus in tuberculous individuals. Milligan,³ who has made a careful study of this subject both clinically and experimentally, says that primary tuberculosis of the middle ear is much more frequent than is commonly supposed. We hesitate to accept this statement, however, for the reason stated in the previous part of this paper.

The course of the morbid changes after the tubercle bacilli

¹ Habermann, *Zeitschrift für Ohrenh.*, VI, Bd.

² Nathan, *Deutsches Archiv. für klin. Med.*, 1884.

³ Milligan, *British Medical Journal*, Nov. 16, 1895.

have been deposited in the mucous membrane of the tympanic cavity, may, according to Barnick,¹ be either acute or chronic; the former being rare and associated with general miliary tuberculosis, the changes occurring so rapidly in the body that the aural involvement is not discovered until the autopsy; the chronic form is common and may be modified by the natural resistance of the parts, or conversely by the virulence of the pathogenic organism acting as the ætiological factor. Most frequently the chronic form resembles an ordinary non-specific suppuration, running its course without pain; but unlike the regular forms of otitic suppuration it rapidly destroys the tympanic membrane, by breaking down of the small, miliary nodules which are deposited in the separate layers of the drum-membrane.

The symptoms vary with the progress of the disease and the amount of destruction present. The first indication is the sudden appearance of pus in the external auditory canal, without previous evidence of disease. On examination, the membrana tympani will be found perforated, but no other signs of inflammatory action will be discovered, and the character of the affection will only be ascertained on the discovery of the tubercle bacilli in the pus, or from the rapid development of general or pulmonary tuberculosis subsequent to the original aural involvement. In general, the symptoms are those of a non-specific suppurative inflammation of a low grade, with caries of the intra-tympanic bones. Subjective symptoms are infrequent, the purulent discharge alone directing the attention of the patient to the ear disease. The absence of subjective symptoms is due to the insidious nature of the affection; the lack of pain resulting upon "the freedom from reaction possessed by the phthisical organism."

In a few cases examination of the middle ear will elucidate the nature of the affection, but in the majority of cases the objective signs indicate what is apparently the common form of chronic suppuration. The perforation in the membrana

¹ Barnick, Arch. f. Chrenh., March, 1896.

tympani is possibly somewhat characteristic; it is circular in outline, its edges are thick and everted, and instead of the congestion of the manubrial plexus and bright red color seen in ordinary myringitis with perforation, the drum membrane is bluish-white, glossy, and œdematous; the color and general appearance much resembling the condition seen over the arytenoid cartilages in tubercular laryngitis. More or less characteristic is the presence of two distinct perforations in the drum membrane. This double perforation is due to the deposit and breaking down of separate miliary tubercles in the drum-head, giving it the appearance of being riddled with shot. When the ossicles are involved, the adjacent bony structures are quickly attacked, and the entire mastoid may break down at a very early period. Associated with these local symptoms is the general condition of the patient, which is so well known as to require no mention here, but as an additional symptom of value, when present, is enlargement of the periarticular glands, these being frequently tubercular before the aural affection appears.

In the early stages, the nodules present in the middle ear are about the size of mustard seeds; round, sharply defined, and scattered irregularly over the entire mucous membrane. When touched with a probe they are found to be hard and resistant, and are readily dissected out from the tissue in which they lie embedded. As the disease progresses, the tubercles increase slightly in size and are greatly augmented in number; the cells forming the tubercle also rapidly increase in quantity, shutting off the blood supply and causing ulceration.

The tubercular process may remain latent in the aural cavity for a considerable time without apparently causing serious mischief, but complications, or rather extensions, of the disease usually occur sooner or later and presage a fatal termination.

Haenel¹ has reported, as a rare complication, a case of

¹ Haenel, *Zeit. f. Chrenh.*, Dec., 1895.

incipient rupture of both the membranes separating the middle from the internal ear, as a result of tubercular caries of the tympanic cavity, both round and oval windows being destroyed; and Bezold¹ says that hyperplasia of the bones of the middle ear and of the foot-plate of the stapes, may also occur. Somewhat doubtful is the production of general tuberculosis by a previously existing otitis media suppurativa, but as high an authority as Von Troltsch² claims such to be possible, although the connection is as difficult of absolute proof as it is probable on general grounds.

Early diagnosis of tubercle of the tympanum is of great importance, as prompt remedial measures offer a chance for removal of the diseased area in a limited number of cases. It is rarely that a diagnosis of the tubercular nature of the aural discharge can be made from mere inspection of the membrane and middle ear; it is necessary not only to carefully consider the local affection, but to find the tubercle bacilli, and much information can be gained from a microscopical study of a portion of the diseased tissues. Should tuberculosis be suspected and examination fail to discover the specific bacteria, it does not necessarily follow that the affection mentioned is not present in the tympanic cavity, as frequently it is necessary to make a number of examinations at intervals before the character of the disease is conclusively proven.

In practically all cases, a microscopical examination for the suspected bacilli is necessary to accurately diagnose the condition. Various methods for staining and differentiating the bacillus are in vogue, but the following is useful in diagnosing tuberculosis of the ear. A minute amount of the pus removed from deep in the tympanic cavity with a sterile platinum loop, is smeared over a cover-glass, then dried by passing over the flame of an alcohol lamp and placed in fuchsin solution. The solution containing the cover-glass is now warmed until it begins to smoke, then with the cover-

¹ Bezold, *Arch. of Otology*, Jan., 1896.

² Von Troltsch, quoted by McBride, *Disease of Ear*, etc.

glass remaining in it, is allowed to cool for an hour or two. The cover-glass is then taken out and decolorized with dilute nitric acid and stained with malachite green and is ready for examination.¹

The prognosis is unfavorable as regards the hearing, complete deafness usually resulting from disorganization of the middle and destruction of the internal ear, and as the bone becomes involved the danger to life is greatly enhanced; in all cases, therefore, an unfavorable prognosis must be given. Should the tubercles be localized in the ear, operation seeking towards removal of the diseased area may be suggested, but must be undertaken with the understanding that rapid miliary tuberculosis of the entire system is apt to result. Locally the various remedies used in laryngeal tuberculosis may be tried. Chloride of zinc, iodoform, and lactic acid are probably the best, especially the latter under cocaine anæsthesia and following curettement of the diseased area. General remedies, as in tuberculosis elsewhere, are necessary to build the patient up to withstand the ravages of the disease as far as possible.

¹ Gruber, Diseases of the Ear.

ACUTE FRONTAL SINUSITIS.

By HENRY L. SWAIN, M. D., of New Haven, Conn.

October 19, 1898.

There is quite a common impression that acute inflammations of the accessory sinuses of the nose have been more frequent since the prevalence of la grippe year after year in our midst, and it has been my own impression that the acute inflammations of the frontal sinus have been decidedly more frequent than acute trouble in any of the others.

Last year we had in New Haven during the winter and early spring two distinct little epidemics of influenza, and with that strange and inexplicable faculty which this queer disease has in singling out certain parts of our organisms upon which most actively to inflict itself, there was a very much larger number of frontal sinus affections than I have ever seen before. Still more curious was the fact that there was an apparent localization to certain districts, or classes of people, as will be best evidenced by the statement that twelve of these cases came to me referred for treatment from the practice of one physician; while several of my own cases, and five others referred by other physicians, came from the same local influences as did the other twelve. Among my other cases were, however, a number from out of town, so evidently New Haven did not suffer alone. This sudden influx of so many cases naturally led me to become more interested in this trouble, and the study and thought which followed make the only excuse I have to offer for burdening you to-day, gentlemen, with this brief paper upon a subject which confines itself to so small a part of this body of ours.

To prove whether my impression was correct as regards an increased frequency of the acute frontal sinusitis, I looked over my case-books for the past twelve years, and found, excluding the last year when there were so many, that there is year by year a distinct increase, so that the winter of 1896-'97, for example, has three times as many as the year 1892-'93, and previous to the first grip invasion such inflammations were an infrequent affair. It will, therefore, be fair to infer that if we continue to have yearly inflictions of the influenza, we may also expect the various observed local inflammations. I do not imagine that my limited experience has any wider application than any other single observation, nor do I expect this year to have nearly as many cases as last, but what I do infer is that the upper air passages, like certain individuals, seem to have a diminished resistance incurred by repeated attacks of the disease, and consequently the future will see more sinus affections rather than less, unless the dread disturber vanishes as suddenly as it came, and who shall say it may not?

"A simple cold in the head," says a certain patient who, notwithstanding he feels pretty badly, thinks that for such a trifle he will not consult the family physician, and retires that night with his nose feeling very much stopped up, and with more pressure in his head than he ever had before. Either then or in the night he suddenly feels an aching, perhaps first in the eye of the side affected, for it more often is but one, and if accustomed to ocular headaches he assumes that he is in for one of these comforts. He is frequently awakened in the night by the pain in the head, and before morning is conscious not only that his head aches, but that the forehead over the eye is aching harder than the rest, and is tender to pressure. By morning, or during the day, he frequently finds that the portion which aches hardest, and is most tender, is also a trifle swollen and often is hotter than the other side, as well as redder. During the night he has been conscious that he is blowing very much more mucus from his affected side than the other, and that it is

completely stopped. During the forenoon he is utterly unable to do any work, the slightest jar, or stooping, or mayhap, if he has a cough, the merest clearing of the throat sends an agony of pain to his forehead. He cannot use his eyes because of the marked watery condition which any use augments. Near work causes his head to ache harder. The discharge, meanwhile, has been increasing until along about ten o'clock, when it reaches its maximum. Between now and afternoon, sometimes slowly, sometimes suddenly, there is a marked letting up of the pain, preceded by the flow of a very large quantity of thin pus, or muco-pus, frequently, when the let-up has been sudden, colored with blood. With the letting up of the excruciating headache the patient feels easier in every way, and by late afternoon is commonly quite comfortable. He can even read a little, and slight jars do not disturb him. In fact, he feels so much better that he thinks the worst is over, and congratulates himself on his splendid good sense in that he did not take his wife's advice and call in the family physician. He still has a bad cold in the head, feels feverish, and the affected side still discharges freely. During the evening his confidence in his progress, and in the aforementioned good sense, is somewhat shaken by occasional reminders from his head, and before morning, or on arising, the same grinding headache is there with even more vehemence than on the previous day. His experience is usually severe enough now to lead him to his most favored physician. If not, by afternoon he again has some sense of relief, and sometimes, without any medical aid, may go through several days of less and less aching. Thus gradually the attack subsides, becoming soon but a disagreeable memory. Other cases seem to go on day after day in such agony that they are compelled to seek relief, and many unpleasant sequelæ of the acute trouble are to be found in neglected cases.

Of course this typical attack which I have described may have any number of variations; oftentimes the ocular symptoms are so marked that the oculist is consulted, especially

in the case where the disease becomes sub-acute. The one-sided discharge is frequently ascribed by the patient, and even sometimes by the physician, to the natural flow of tears into the nose. Some severe cases have continued pain for days without the relief, which was referred to previously as occurring sometimes in the middle of the day, and such cases are among the most unhappy of mortals. Some of these indeed may have absolute cessation of all discharge and may develop most alarming symptoms from pressure. Sub-acute cases seem more prone to lead to a chronic discharge than the more stormy and violent ones, which latter I have known to clear up with one sudden gush, and a few days of increased discharge from the affected side. In other cases we have prolongation of the symptoms due to complications which occur all too easily with the ethmoid and maxillary sinuses. When the chronic pus-formation has once become established there seems to be no limit to the length of time which it may exist, and complications are so liable to arise with the other sinuses that it is very rarely we are called upon to treat only the frontal.

Now what has happened to the poor afflicted mortal with the acute sinusitis is apparent and well known to you all. Some condition in his nose, or in the nature of his infection, however, determined why he should have had a frontal sinusitis out of what in his neighbor was a simple coryza. Why did in his case this infection get away up in that by and forbidden path, and such dire consequences result? That none of the other sinuses are involved, I take it must be some anatomical peculiarity which determined its selection. But we must first inquire what transpires when any of these accessory sinuses are acutely inflamed. It seems fair to assume there exists first a violent, or I might better say wide-spread, congestion of the nose, and this undoubtedly always involves the mucous membranes lining the more adjacent sinuses. There is some evidence that the maxillary sinus is more frequently involved in acute processes than is commonly supposed, and it would not surprise me if syste-

matic illumination of that cavity would show, as I know it in a few cases to have done, that in any severe cold with profuse discharge there is a congestion of that cavity. This is inferred by the poor transmission of light which in the same individual is very different when the cold is gone. Supposing, therefore, that the congestion exists in the frontal sinuses, it is quite reasonable to suppose that they are frequently equally congested, and yet one gets infected and the other not. Presumably the variations in the canal of outlet may account for this or that sinus being afflicted. I can from my own observation state that clinically I have found the nostril affected to be different from its fellow, in that it is almost always narrow in the upper part. Or there is malformation or absence of the middle turbinate, or hypertrophies or polyps exist, any, or all, of which would suffice to make this easier to become inflamed than the other side. Without putting it too strongly, it has seemed that in every case some lesion was present, the influence of which was to narrow the outlet from the frontal sinus, or there were modifications of the canal itself. No two of these passages are alike, and all degrees of patency seem to exist in subjects who have remained healthy. From the above one might readily believe, then, that disease of the middle turbinate region making these parts readily inflammable under sudden coryza may create foci of infection near the opening of the canal. This would lead to congestion of the interior of the sinus. The latter will usually, then, under such conditions have some secretion, and if this cannot readily escape from the canal, retention of but a few hours would be sufficient for this to become infected, pus would result, and then follows the entire clinical picture which we have described. I have never seen a case of frontal sinusitis previous to the formation of pus, consequently it is assumed that unless infection actually takes place, as is also the case with all the sinuses, neither the patient nor his physician is cognizant of the existence of any trouble. Secretions having once dammed up inside the sinus, pressure occurs, and this leads

to venous stasis of the surrounding membranes in the nose. These swell and thicken, and we almost never escape the formation of granulation tissues, and even polyps, where previously nothing but plain hypertrophy existed. This new tissue blocks the canal still more, and thus an effect becomes a further cause of trouble of the same kind which produced it. Just how much the micro-organism has to do with this affair I am not in a position to say, but this much is certain, that nasal mucus itself is secreted sterile, and the first effort of nature seems to be to throw out large quantities of it. Micro-organisms present are thus washed out. Given, however, retention areas and immediately there is a chance for the germs to multiply, and anon we have muco-pus and pus. Should this process of infection of the mucus take place near the opening to any of the sinuses it is but a step to enter and infect this remote part of the nose. The discharge from sinuses seems always to be purulent, and hence contains micro-organisms. I would like, therefore, before leaving this point to emphasize the fact that it seems probable that our germs, having neither wings nor yet legs, cannot by any accident suddenly find themselves way up inside the frontal sinus, but that the blame must rest upon the existence in the neighborhood of the opening of that sinus of some pathological or anatomical condition favorable to the development and propagation of these organisms, and from this comes the very eminently plain deduction that our prophylaxis must lie in the removal of such conditions.

It has been mentioned that the secretion comes at some times of the day more than others, and this is not only because the outlet is sometimes more open, thus allowing of a freer flow, but there is actually more secretion formed in the sinus at one time than another. For example, in chronic cases of empyema of the maxillary sinus the patient will find in the afternoon, on washing it out, that he has absolutely no pus in his antrum. He will arise in the morning and also find none, but by noon enough will have been formed to fill the entire cavity and overflow into the

nose. This same thing happens in acute cases, and I believe this explains, apart from the actual stoppage of the canal, why in cases of acute frontal sinusitis the morning pain is frequently so extremely intense. The only explanation of this phenomena which suggests itself would seem that at night, while sleeping with the slowed circulation, all metabolism and cell reproduction is slowed up. Then upon the individual's arising a much greater activity of the circulation causes the pendulum to swing in the opposite direction and everything is most active in its reproduction, so that after the individual has been up and moving about for three or four hours there is actually a very pronounced increase in the amount of pus formed. Whether this circulatory theory is true or not, this larger amount of discharge, in the case of the frontal sinus, must go through the same opening through which a smaller amount has been passing, and consequently there must be retardation of the flow and pressure, and herein we have an explanation of the sudden increase which we periodically have in the pain in these cases. We also have to remember that we are dealing with a membrane where there is erectile tissue, and that the ebb and flow of the blood in it inevitably causes a change of volume, so that a granulation, for example, which would merely impede the flow of pus, would, in the engorged condition of the membrane, act as a ball valve, completely blocking, for the time being, all exit.

That complications arise from having this discharge running down into the nose would seem scarcely to be avoided, especially if we think how thin the walls are which separate the posterior part of the canal from the ethmoid cells. It opens into the hiatus semilunaris, just above and in front of the opening into the maxillary sinus. We can add to this fact another, which is that when one pours a fluid in through a hole in the front wall of the frontal sinus in a skull, it will find its way almost invariably into the maxillary sinus. It would, therefore, seem really providential that every patient with frontal sinusitis did not, before he got it cured, have

also inflammation of the antrum of Highmore. The only thing which could prevent such an accident would seem to be that the swelling of the tissues due to inflammation blocks off the antrum from the rest of the nose.

The diagnosis of such cases as we have under consideration is usually easy. When a patient presents the one-sided headache, tenderness, redness and swelling of the frontal region near the root of the nose, and has, with all, a one-sided mucopurulent discharge, it is quite plain, and safe to assume, that the patient has at least a frontal sinusitis if nothing more. Confusion might arise from the fact that occasionally a discharging maxillary antrum may bother its fond possessor with occasional frontal headache even in the chronic state, or such a patient may have a supra-orbital neuralgia, or median headache might accompany an ethmoid trouble. But by carefully locating the tenderness by feeling just under the orbital ridge, and quite close to the nose, it will be safe to assume that you have to do with a frontal sinusitis. Examination of the nose will usually reveal that pus is present and that it tends to come from the front part of the middle turbinate region, and occasionally one can see it actually flowing out of the region of the outlet of the frontal sinus. However, the only safe way of judging any sinus to be acutely or chronically inflamed is to see pus flow out into the nose following the probe which has been introduced into its natural opening. You are then absolutely sure.

The prognosis, with treatment, is good, and where it is possible to remedy predisposing causes or conditions we can promise fair immunity from subsequent attacks. Frequently, however, without treatment the case will get well, and that is due to the fact that the drainage from the cavity is good when once established, whether by nature or by art.

Our treatment is plainly indicated, first to relieve the general constitutional conditions by the usual methods, never failing to reduce the trend of blood to the head by every reasonable means. A saline cathartic is almost always indi-

cated. Locally we try by every means to keep the nostrils free from mucus or pus, and to secure the freest possible drainage to the sinus. To the first end, cleanliness, hot fluids are most valuable, both from the flushing which their use involves, and also from the heat itself. Hot normal saline solution is freely flooded through the nose, preferably by snuffing it up. Hot water externally over the sinus, as in hot water bags or hot water coils. Of course if one could see the disease very early, ice may abort a serious inflammation. The earlier the blood letting takes place, the better. It may be local in the nose or by leeches externally. If the nostril is tightly stopped, spraying with Seiler's tablets in solution, following the hot salt douche, both cleanses and reduces tumid turbinates. Cocaine under stress of circumstances, by virtue of the fact that it always will cause erectile tissues to contract, can safely be used occasionally by the physician himself, but should never be given to the patient to use unless as a most rare exception. It is nowadays very feasible, and will help very greatly in establishing patency of the nostril, to use first, oneself, the cocaine in small amounts, and follow it closely by an aqueous extract of suprarenal glands. This latter the patient can also be allowed to take home with him, and by repeating its use can keep a nostril open to its maximum for a number of hours. The greatest possible widening and freeing of the nostril by the shrinkage of the turbinates follows the combined use of cocaine and suprarenal capsule extract. While the patient is under the influence of both, the medical attendant can frequently relieve the distress immediately, by probing into the frontal sinus canal. This is usually feasible, and when repeated daily gives the patient the greatest possible comfort. The probing usually reveals sooner or later granulations, hypertrophies, or polyps. These, if present, should be removed at the first sitting, and with a sharp scoop all the granulation tissues removed from the region of the opening of the canal.

By following a routine in keeping with above suggestions

the patient will usually keep himself in as comfortable a condition as is consistent with the severity of his case. He may in addition get a considerable relief by the insufflation of dry boric acid. This latter should not be used in large quantity, and will tend to keep the discharge fluid and prevent any retarding of the flow from the sinus, which a viscid mucus can readily do. Patients should repeat the cleansing process every three or four hours as symptoms urge, and are better seen daily. When the headache is unbearable, medicinal treatment will ameliorate it. Rarely in acute cases, and then usually in what are but acute exacerbations of chronic trouble, is one called upon by the severity of symptoms, such as threatening meningeal trouble, to make an artificial opening. This may be properly done by trepanning front or lower wall, and having broken down all impediments to free drainage into the nose, scrape out the diseased tissue within the sinus, insert a drainage tube of soft rubber through the infundibulum into the nostril, one can close the external opening and frequently allow it to heal up without serious trouble, either from the treatment of the wound, or with the scar which it leaves behind.

If I have aught to say in summing up this somewhat lengthy description of a very distressing disease, it is to encourage local treatment. I do think we can accomplish quite as much thereby in these cases in the way of relief and comfort to the patient, as it is possible for us to do in any other distressing acute inflammation.

DISCUSSION.

Dr. Rochester said that with a combination of a 4 or 5 per cent. solution of cocain with a 2 or 3 per cent. solution of antipyrin the tumefaction might be very satisfactorily reduced. He has not yet tried the suprarenal extract.

TRUE AND FALSE MEDICAL AND OTHER CHARITIES.

By WIKES WASHBURN, M. D., of New York County.

October 19, 1898.

GENTLEMEN: The subject of charity is an old one, but only recently has it come to be studied and discussed at all on a scientific basis. So far are we from hearing the term properly used, that recently it has been applied to the Red Cross and other societies; their ministrations to our soldiers called charity.

God grant that this application of the term may never come into general use, for the poor fellows who suffered, bled, and all but died for their country, were richly entitled to all a grateful people could do for them. It was but a spasmodic and partial effort to do, in some small degree, what the government, under the circumstances, had failed in simple justice to the brave boys.

Only now are we beginning to think of mendicancy as a disease. Swedenborg's idea of charity, as given in the following quotation, does not treat mendicancy as a disease, nor does he speak of the deserving and undeserving recipients of charity. "Those who are by nature compassionate, and have not made their natural mercy spiritual by exercising it from genuine charity, believe that charity is to give to every poor person, and to relieve everyone who is in want, without first inquiring whether the poor or needy person is good or bad; for they say that this is not necessary, since God looks only on the aid and alms. But after death these are discerned and separated from those who have performed eleemosynary acts from prudence; for they have performed

them from that blind idea of charity, then do good to bad and good alike, and by their aid the wicked do evil and thereby injure the good. Such benefactors are, therefore, partly to blame for the injury done to the good. For to do good to an evil-doer is like giving bread to the devil which he turns into poison; . . . It is also like handing to an enemy a sword with which he may kill someone. . . . And it is like giving public authority to a robber, who studies and watches for plunder only according to the richness and abundance of which he dispenses the laws and executes judgment."

To come down to recent times, two students, and very active workers in charity, expressed themselves as follows: Mrs. Josephine Shaw Lowell, herself a philanthropist and a life-long student of charity, says: "Now in all our attempts to help other people we must remember that this distinction exists; we may do for them what they want us to do, and yet it may be the very most cruel thing that could be done for them. We see it often in the case of parents and children. The parents give the children all they want, and instead of helping them they are really destroyed by it. They grow up lazy, selfish, shiftless, unfit for life. . . . It may seem kind, but can anything be more cruel than to destroy the character, the soul, of another person? What is a little ease or comfort or pleasure worth compared to nobility of character? And yet, as I have said, parents who think they love their children, sisters who think they love their brothers, will, to give them a little passing happiness, do them this great wrong. Now is this not the very wrong that relief does, to give people a little temporary, physical help and (to please ourselves) we are willing to do an immense moral harm to the people we think we want to help, and also a great economic harm to the whole community, for relief giving does without doubt encourage idleness and make idlers."

Mr. Thomas H. Muhlry, long connected with charitable matters, commenting on so-called charities without coöpera-

tion or investigations, in a paper read before the Catholic Club, said: "The strange spectacle was presented of charitable societies working each in its own way, for the good of the poor, and yet violating every principle of charity and religion in their intercourse with one another. This spirit of opposition could not fail to be destructive in its results. It created a sort of piracy among the charities. One was constantly poaching on the other's domain, and the professional pauper, the designing beggar, and the avaricious applicant were reaping a harvest over the disputes and the rivalries of the contending sects." Surely this is as true to-day of the medical charities as exemplified in the dispensaries and hospitals as it was of other charities in the time of which Mr. Muhlry speaks.

"There are two fundamental axioms which every charitable organization established during the past twenty-nine years in any part of the world has tried to learn, to practise, and to teach: first, that in order to help any person in chronic distress you must find out the cause of that distress; second, having found the cause you cannot hope to cure the distress (disease) except by patient, intelligent, personal work."

Assuming that distress is disease, in order to cure it you must learn what it is, and then use skill and conscience in its treatment. Surely these are reasonable axioms. I cannot speak more strongly than I feel on this subject of the evils of relief, for I believe that among the many causes of poverty, an important one is the relief given by private charities, individuals, and from public funds." (The initial one is usually the dispensary.)

We as physicians are largely responsible for the increase of pauperism. Statistics from the comptroller's office show that now nearly four times as much as formerly is spent per capita a year for the care of paupers. (See my paper read before the National Conference of Charities, May, 1898.)

If we could trace the history of our dispensary patients we should find, in many cases, that free medical treatment was the first gratuity they received, and as I have indicated,

it is not really a true charity, for it too often starts them on their downward course. It teaches them to be dependent; it teaches them that things may be had for nothing. They go from the dispensary to some society that helps them in rent; from that to another which helps them in groceries, and end in being complete dependents.

To show the scientific value of the vaunted experience at dispensaries, I quote to you the case of Esther, as given me by Mr. Rosenau, manager of the United Hebrew Charities, through whose kindness I have been able to read the clinical history of Esther as shown on the cards of eighteen different dispensaries. Some of them are our best known, and bearing the names, I regret to say, of some of our leading specialists. These cards indicate that Esther was under treatment at four different dispensaries at the same time for women's diseases, at six different dispensaries for internal medicine, at two for nervous diseases, at four for nose and throat, each and all within the period of eighteen months, and most of them at the same time.

I submit, gentlemen, that the moral disease in this case is worse than the physical, and that neither the moral nor the physical can be properly treated under these conditions. Now let us apply the rule which Mrs. Lowell, Mr. Muhlry, and Mr. Rosenau all endorse and tell us governs all other organized charitable societies,—and please remember that charitable organizations are simply clearing houses where one charitable person may learn what another charitable person has done or is doing for a given individual. I say if we are to carry out these principles, we must know in advance whether our dispensary patients really require the services of a physician for nothing. And when we recommend such legislation as will require investigation, we are doing that which is done in other than medical charities. We are making it possible to treat unhampered by the medicines given by another doctor such cases as that of Esther. We are making it possible to give our time to the deserving rather than to those who are beginning to develop the disease of

mendicancy, and I claim that we have no moral right to give relief to these people and start them on their downward career. In our recent experience in trying to have a law passed by the legislature that would systematize the giving of relief at dispensaries, as is done with other charities, we have met with opposition from sources we should least expect; but when, to quote from my address before the National Conference of Charities, "It is shown that nearly \$100,000 is wrongfully taken from the city by three institutions in one year," we see a possible reason for some of this opposition.

To quote from the *Syracuse Courier*: "The increase in the number of free dispensaries has incited thousands of well-to-do persons to fraudulent practices. Citizens who would resent the imputation of being paupers show no hesitancy in defrauding these charities by applying for free treatment. Persons well able to pay for medical attendance jostle the really needy and deserving poor in the effort to obtain something for nothing. In taking this advantage of a charitable purpose, they not only injure the poor and helpless, but also encourage dishonesty. . . . The free dispensary as conducted in New York has become an incubus on the medical profession there, and a reform in the methods of relieving the poor through these channels is urgently demanded." Here we have indicated the two sources of opposition to any measure which is calculated to do away with the evils that now exist; the one because place and power might be taken from some who use it unworthily, and the other, because those whom the *Courier* designates "as well able to pay" would no longer be able to get something for nothing.

To quote from one of the ex-presidents of the State Society: "Said a legislator, 'If you will all agree on a bill providing for state legislation, we will pass it.'" Now it is hardly fair to expect all doctors to agree to the same manner of correcting an evil, even though all admit its existence; as yet the two great political parties have never been able

to agree upon a single method of curing any evil. That pauperism is a disease I believe will some day come to be generally accepted. We recognize now in insanity, changes from the normal in the patient's condition, habits of living, and general behavior as symptoms of disease,—and is there not sufficient change from the gentleman that was, to the tramp that is? The tramp is a familiar figure to us all. His pulse is slow, all his functions are less active; he is dirty in habits and person; he lives irregularly in every way, whereas formerly he lived regularly; and still we do with him, as formerly we did with the insane person—who has only very recently come to be considered diseased. To quote from the *London Saturday Review*: “The sole endeavor of our local authorities is to shrink from dealing with them (the tramp). For my own part, I cannot regard the tramp population of listless wasters with feelings of aversion alone. Life narrowed to the workhouse and the prison! That men should be born to this, or fall so readily to it, calls for more than aversion.” This same aversion was felt for the insane before insanity was recognized as a disease. Shall we, as physicians, stimulate this disease which brings down the person, and bends the character to quite as pitiable a condition as insanity? Shall we not begin the treatment of this disease as we would that of any other by fixing its ætiology, marking out its prophylaxis, withholding relief except as necessary, and finally agreeing upon a remedy?

I have shown you in the case of Esther that we cannot apply the remedy without coöperation. I have shown you by the quotations from Mrs. Lowell and Mr. Rosenau that no charity can be administered properly without coöperation and investigation. From the one you will see the immense advantage, from a clinical point of view, of having the cases investigated to prevent many doctors treating an individual case. From the other you must see the necessity in medical charities as in others of preventing duplication of sources of obtaining charities, and thereby stimulating the disease of mendicancy.

Last year, in trying to pass a bill, by an unfortunate misunderstanding one branch of the medical profession, legally qualified to practise medicine, felt themselves ignored in the matter and did not help us in our efforts to secure what we then believed, and what we now believe, to be proper legislation for curing the dispensary evil. I am glad to say that this matter has been largely righted. I quote from the address of the president of the Homœopathic State Medical Society, made at its last semi-annual meeting: "As to the abuse of medical charities, I believe I voice the sentiment of this society and of the entire homœopathic profession when I say that we realize the great evil in our present methods of administering charities and that we are as desirous of correcting this evil as any society or organization." And in a letter to me this same man says: "You will recall that last spring I assured you that in my opinion, if the two organizations united on a bill, we could secure its passage in spite of all opposition to it." He goes on to express the hope that this coming winter we may be united in our efforts to accomplish that for which we worked last year, viz.: the passage of a bill which will put the dispensaries fully under the charge of the State Board of Charities, in that the State Board of Charities may be able to make rules and regulations regarding the investigation and the reception of patients at dispensaries, the keeping of records of those who apply and are unworthy, the punishment of those who continuously apply unworthily, and of those who continuously treat those unworthy of relief.

Most of you know that the State Board of Charities has authority over all charitable institutions, including dispensaries, but it is to a limited extent. Dispensaries, like other charitable institutions, can obtain a certificate of incorporation only after approval by the State Board of Charities, but once having obtained a certificate of incorporation, the powers of the State Board of Charities under the constitution of the state extend only to inspection, recommendation, and the requiring of a report. The annual reports of last

year show a very large proportion of the population to have been treated at dispensaries. The same dispensaries now claim that cases and individuals are very different, and that the case of Esther would show that the proportion of the population treated in dispensaries was much less than indicated. Even though this may be true to some extent, still the necessity for having the investigation is none the less urgent on medical and truly charitable grounds; therefore, I venture to express the hope that this winter there will be a united and intelligent action, and that all parties interested may be consulted, that the dispensary managers will consent to the bill of last winter, without amendments that will vitiate its provisions. I venture to hope that the State Board of Charities will be able to convince all doubters of the efficiency, the justice, and the necessity of such a bill, and that it may be passed at the next session of the legislature.

This bill would, I believe, relieve the taxpayers by reducing pauperism, and in the end would lead to a recognition of what I believe to be a fact, that mendicancy is a disease and requires treatment as such. This treatment must contemplate the elevation of the individual, a cultivation of self-reliance, and a self-respect incompatible with dependency. This cannot be done except by coöperation, and coöperation cannot be had without legislation.

DISCUSSION.

DR. WILLIAM FINDER, JR., of Rensselaer county, said he also believed that physicians were largely to blame for this extensive pauperization of society. It often had its origin in the free treatment of the clergy. The physician should not hesitate to exact a fee from persons who are abundantly able to pay one, as physicians already do too much without remuneration. Treating the clergy for nothing, regardless of ability to pay, often led them to advise others to obtain free medical treatment. We should begin in this way at the root of the matter.

DR. E. E. HOLT, of Portland, Me., said he felt quite confident that the medical profession was greatly at fault in this matter of indiscriminate charity. Only a week ago his attention had been

called to a case in which a person who was abundantly able to pay was sent to the Maine General Hospital by the attending physician because the latter did not wish to have it said that he could not do the required operation. Just as soon as a physician begins to help people who are able to help themselves, he starts them on the wrong road. Eventually there would be a law in Maine, requiring that every one seeking aid be provided with a certificate from the overseers of the poor, or other proper officer, stating that the applicant is a worthy object of charity.

DR. LEROY J. BROOKS, of Chenango county, said that coming as he did from a district in which every one must pay for medical services, even if it were in potatoes instead of cash, and where even the clergy must pay, he did not feel like being included in the statement just made about the culpability of the medical profession. He was inclined to place the blame chiefly upon the larger cities. It was commonly known that whatever the circumstances of the patient, or his ability to pay, he could leave home and come to a large city and get the desired operative or special treatment for nothing. Physicians in the rural districts were constantly called upon to face this unjust competition. There was not another city in the state which cultivated this tendency so much as New York city. This social evil was a matter of false education. The dispensary evil was not nearly as great in other places as in New York city, and for this reason the evil throughout the state could be controlled without legislation, for the physicians in charge of institutions would protect the rights of others in the profession. The growth of this kind of pauperism had been very rapid and appalling in New York city during the last twenty years.

DR. A. PALMER DUDLEY, of New York county, said that aside from Bellevue Hospital and its branches, Harlem and Gouverneur hospitals, the hospitals in this city were governed by laymen who made the regulations for their management. There were two institutions in this city for post-graduate instruction, and they were fed by men from up the state—indeed, from all over the world. The blame, therefore, rests upon those who come to these post-graduate institutions for six weeks or more, and then go home and send patients to these schools for free treatment. Only yesterday he had been obliged to operate upon a person well able to pay, because she had been sent from Troy by a physician who had studied at the institution, and who had informed her that

she could get the desired attention and treatment gratis. Under these circumstances it did not seem to him fair to lay all the blame on New York city.

DR. H. D. DIDAMA, of Onondaga county, inquired if no questions were asked as to the financial ability of patients sent to New York city from outside districts. In Syracuse an effort was made to carefully inquire as to the financial condition of those coming to the dispensary. If the patients were not quite satisfied with the treatment at the dispensary, they would usually go to the outside surgeons and pay, just like human beings. The clergymen, whom we treat without charge, repay us by signing all sorts of certificates regarding the efficacy and value of quack medicines. The trouble in New York city seemed to be the sharp rivalry between the many dispensaries. On the authority of a man connected with one of the medical schools, the statement was made that years ago the medical schools worked for revenue only. The students at that time were admitted without any examination, and it was not even known whether they could read or write. As might be expected, a great many graduates were turned out who had needed to go to a post-graduate school ever since.

MR. DUDLEY said that the patients coming to the institution with which he was connected were subjected to inquiries as to their financial condition, but they were prepared to answer in such a way as to deceive the officer of the institution. One of the patients who had received a good deal of treatment at the dispensary was seen by the dispensary physician riding in a handsome victoria in the park. When accused of it, she at first denied the charge, but afterwards confessed, and then the physician counted up the number of visits she had made to the dispensary, made out a bill at the rate of ten dollars for each visit, and sent it to the husband with a notice that if it was not paid at once he would enter suit against him. The bill was promptly paid.

DR. W. B. REID, of Oneida county, said that the spirit of commercialism among the younger men was coming into this question entirely too much. There was a prevalent spirit of selfishness, which was most noticeable in the larger cities. The cause of the evil under discussion lay chiefly in individual selfishness. The nobleness of character so commonly seen in the former leaders of the profession was unfortunately becoming very rare.

SOME THOUGHTS ON THE RATIONAL TREATMENT OF DISEASE.

By CHAUNCEY P. BIGGS, of Tompkins County.

October 18, 1898.

It occurs to me that an intelligent layman might say, there can be but one basis for the treatment of disease, and that must be a rational basis.

Members of our profession know that rational medicine is synonymous with modern medicine, and that empiricism formed the basis of the treatment of disease in former times.

The subject of this paper was not selected with the idea of presenting anything new, but rather because it was thought that a review of our professional work, past and present, might be undertaken with profit and satisfaction. Probably all of us who are engaged in the active practice have at one time or another felt the embarrassment that naturally grows out of the uncertainties of our professional work. Medicine is not an exact science, and the nature of our work is such that we may not even hope it will ever become an exact science. While it is too much to expect that the treatment of disease can ever eliminate all of the *unknown* and *unknowable* quantities, yet in the advances that have been made along these lines we have much to encourage us. In the early days of our profession the treatment of disease was a mass of empiricisms. The advances that have been made are along the line of rational, rather than empirical medicine, and in the substitution of exact knowledge for theory and opinion. It will be my purpose in this paper to point out to you some of the great advantages of rational medicine in the treatment of disease; and also to show that the

quality of work done by a physician will depend very much upon whether his methods be rational or empirical. If we examine the medical literature of fifty or more years ago, we will find that of the agents then used in the treatment of disease, perhaps half a dozen have stood the test of time; the rest seem to have had no rational basis for their use, and have long since been proved to be valueless. I believe that the regular school was itself to blame in making the conditions favorable for the development of homœopathy. It was the nauseating and heroic doses, of the regular school of fifty or more years ago, that brought it into disrepute, with a certain class of the laity, and prepared the way for homœopathy. The niceties of modern pharmacy, and the small oft-repeated doses prescribed by a good part of the regular school, have robbed homœopathy of its greatest charm, and its strongest grounds for popular favor. We have no doctrines such as "*Similia similibus curantur*," and we should be limited in our remedial agents only by our reason—we are free to use anything our reason teaches us will do the patient good.

Neither the homœopath, the electropath, the hydropath, nor the eclectic have any copyright or patent right on their theories or methods of treatment, and I believe if any of these theories or methods have any value, we should use them, and admit we use them, not because of their special name or origin, but because we believe, taught by experience, that they will benefit the patients. I believe there is a kernel of truth in all the pathies, but it does not follow that all the theories and methods elaborated upon some infinitesimal truth taken as a beginning are true. My only objection to homœopathy is that its professors are not honest. They build up a school of medicine, appeal for patronage upon certain theories, and claim to adhere to certain methods of treatment. So long as their patients are not very ill, and it does not really matter whether they have any medicine or not, everything goes well, and "*Similia similibus curantur*" and a 1-1000 of a minim works like a charm; but when they

have a patient seriously afflicted, needing drugs that act, they resort to our *materia medica*; this they are not honest enough to admit. Perhaps I have digressed somewhat from my subject, but the treatment of disease is a very broad one, and gives me plenty of latitude.

It seems to me that the kind of work done by a physician, that is the quality of his work, depends very much upon his convictions in regard to the differences between empirical and rational therapeutics. In the early days of our medicine the treatment of disease was entirely empirical. No one could for a moment suppose there was any rational basis for the remedial agents used. Take for example a few of the remedies said to have been used. It was believed epilepsy could be cured by the wearing of a silver ring made from a coffin-nail. Seven drops of blood from the tail of a cat, or blood from a recently executed criminal, were considered valuable remedies for epilepsy. To cure a felon or run-around, hold the finger in a cat's ear for half an hour. For toothache, trim your finger-nails on Friday, or eat bread that a mouse has nibbled, or carry in your pocket a tooth from a soldier killed in battle. For ranula of the tongue, spit on a frog. For alcoholism, drown an eel in brandy and make the drunkard drink the brandy. To cure warts, rub the wart with a potato, and feed the potato to a pig. These remedies seem to us to be the height of absurdity, but if one could believe these remedies would benefit patients suffering from these maladies, and should use them in half a dozen cases, and find that a majority recovered, how could I prove to him that the treatment had nothing whatever to do with the result? Herein lies one of the great dangers of empirical medicine. If you believe in a remedy, and have no reason for your belief in it, you and your patients can attribute every recovery under its use to its beneficial effects, without danger of contradiction.

Dr. Oliver W. Holmes once said,—“In the natural course of things every week some thousands of persons in this city alone must be getting better of slight colds, or of rheumatic

pains, or other ailments. Hundreds of them do something or other in the way of remedy, by medical or other advice or by their own notion, and the last thing they do gets the credit of the recovery. Think what a crop of remedies this would furnish if all were harvested."

So long as you have no rational basis for the treatment of disease or for the remedies used, anything in the heavens above, in the earth beneath, or in the waters under the earth, can be suggested for the treatment of any disease; and until you have tried everything suggested, how can you know that this or that or the other may not have some value? The point I wish to make is that we cannot afford to try remedies simply because we cannot prove them worthless. In medicine proofs are difficult to obtain. A physician willing to try any remedy a colleague, a medical journal, or a manufacturer may recommend, and having no better reason for believing in it than that some one says it is good for a certain disease, is like a vessel without a rudder. He is turned by every wind, tide, and current. He accepts the remedy without sufficient proof of its value, and he will discard it without giving it sufficient trial. This experience repeats itself time and time again, and he acquires the habit of vacillating from one thing to another, trusting the while to luck and a kind Providence. His patrons pay him for a service, the value of which depends more upon the moral effect than upon the drugs prescribed.

Empirical work in medicine is demoralizing. It leads us to consider the treatment of disease a matter of guess work. We know nothing about the physiological effects of our remedies, and when our patients recover or die, we are unable to tell how much of the result was due to our treatment. Perhaps you think I draw the picture too dark, since some of our most valuable agents are used empirically; indeed they were discovered and brought to the notice of the profession by just the methods I am assailing. I admit that there are something like six old remedies which are used empirically, and that they have great value; but would

it not be surprising if the experience of the whole profession in the whole world in some hundreds of years had not discovered some agents near enough to being specifics to stand the test of time? I believe thoroughly in the use of agents which have *stood* the test of time, but I do not believe in finding others by following the methods of the past. Life is too short, and we have better means at command. I do not believe a remedy is entitled to our consideration simply because we are not able to prove its worthlessness.

If experience has taught us, or taught the profession at large, that a remedy has value, use it; but be sure that it has value if you use it empirically. In the modern methods of rational medicine, we ascertain the value of a drug by learning its physiological effects. These we learn by experiment on animals, or even upon man. After a drug has been thus tested by rational methods, we know what to expect from its use, and we use it for a distinct purpose. As a rule, we do not use it with the broad idea of curing a malady with which our patient is suffering, but rather with the idea of alleviating certain symptoms. Specifics in medicine are few and far between; but nature is always on the physician's side, and if a physician's efforts are directed towards the assistance of nature, the best results may be expected.

DRUGS VERSUS CARDIAC INSUFFICIENCY.

By O. T. OSBORNE, M. D., of New Haven, Conn.

October 19, 1898.

I do not intend a long resumé of facts that you all know better than I can tell you, neither do I propose to take into consideration the pathology, etiology, or clinical history of heart lesions, but will, with your tolerance, spend a few minutes upon this most serious question which my subject suggests.

For our purpose I will divide cardiac insufficiency into two classes :

1. Incompetence with valvular lesions.
2. Badly acting hearts without valvular lesions.

The first class necessarily divides itself into acute and chronic insufficiency. Let us for a moment picture the former, for rarely has a writer described that cardiac agony as we see it. We hasten to answer the hurry call, and wonder if this time we will arrive before he or she dies. We find the door open and the relatives all in anxious waiting and looking their joy at our arrival, while the patient's eyes give that longing appeal and say what many times the lips have not breath to utter. We find each patient always in the same position as we have been wont to find him under the same conditions, and each of these sufferers has learned the position that suits him best, viz., always with the head raised, perhaps in bed, perhaps out of it, perhaps sitting, perhaps standing and leaning upon the back of a chair, or upon the foot of the bed, but always using every axillary respiratory muscle (generally by fixing the arms) to combat that most terrible of all things, acute cardiac dyspnœa.

The patient is generally bathed in a cold perspiration, and the extremities are often icy cold; he calls for air and to stop fanning all in one breath; he wants his brow wiped off, but nearly goes frantic while it is being done. His noisy, groaning expiration, with the wild, staring eyes and the agony depicted on his face, shows the suffering he is undergoing. Perhaps incontinence of urine and even fæces, with frequent short coughs, or even hiccoughs, and often vomiting, with frequent stings of cardiac pain, complete the cup of his misery. If you have seen this case at many such times you cannot but ask yourself the question, What right have I to save him and then compel him to suffer again and again like this? I use the word save wittingly, for we physicians do surely save these cases as surely as the surgeon saves with his knife, for this is rarely a case of *vis medicatrix naturæ*, and not a case of *post hoc* but *propter hoc*, if we reach our patient in time.

As every minute may be the last, we ask but few questions, and, if any, mostly of the relatives, but, sizing up the conditions, begin our treatment.

Our armamentarium consists of digitalin, morphine, strychnine, camphor, nitroglycerine, atropine, alcohol, and in a few cases venesection. It is more than useless to administer any drugs by the stomach in the above-described condition, as there will be no absorption, even if the contents of the stomach are not ejected. The immediate conditions to meet are the very rapid, fluttering and irregular heart, the nervous excitation, the cardiac anxiety, and, perhaps the most important of all, the vasomotor spasm that is pronounced. Physically we have, then, a heart with leaking or constricted valves, in either case more blood entering the chambers of the heart that can be well gotten rid of by one contraction, while the peripheral resistance, due to the spasm of the blood-vessels, becomes greater every minute, which tends still more to interfere with the emptying of the heart. Owing to the well-known stimulus of distension to hollow muscular organs the heart begins to contract faster and faster; soon by some

disarrangement of the inhibitory apparatus, the pneumogastric, the heart loses its governor, and the result is 150 or more beats a minute, with irregular contraction, the blood being sent through the arteries with irregular force, as evidenced by the varying volume of the pulse. At this time, with or without cardiac pain which upsets the rythm of the heart, the patient becomes frightened at the feeling of impending demise, and the cerebral reflexes begin to add to the cardiac difficulty. The breathing becomes nervously rapid, besides what is due to the rapid heart, the chill of fear is added to the already contracted peripheral vessels, and we get spasmodic contraction of them, and the icy surface of the body. Next the strongly contracted arterial system begins to actually prevent some of the peripheral circulation, and the blood is piled up in the large arteries, while the venous circulation becomes more and more sluggish, the lips, fingernails, and forehead look bluish, and even a diminished amount of blood goes back through the large veins. Respiration becomes more rapid and deep, the inspiration being as strong as possible, every axillary muscle taking part, thus making the negative pressure in the chest aid, as far as possible, in bringing the blood back through the veins, the arterial spasm being so great as to impair the ordinary arterial propulsion of the blood. Undoubtedly part of the extra respiratory stimulus comes from the lessened arterial supply to the respiratory center.

Two factors may normally, without treatment, check these cases, and the bad "heart turn" may be cured spontaneously. One is where the patient does not lose his head, so to speak, and has a will-power so strong that he will not get nervous or frightened, and prevents the mental irritation of the heart and also the final peripheral spasm of the blood-vessels, and in a shorter or longer time the heart quiets down. We all recognize this power and utilize it by some immediate assurance to the patient, and the caution of "Now, don't worry, we will soon have you all right."

The other cause of spontaneous cure is where the exhaus-

tion from the respiratory muscular effort, plus the drowsy condition caused by the cerebral hyperæmia, with, perhaps, imperfectly aërated blood gives finally a dulling of the mental power and a removal of the nervous excitement, which with the exhaustion gives a relaxation of spasm, and the resistance to the flow of the blood is removed, the surface of the body becomes warm, the heart quiets down, and the paroxysm is passed. The part that the nervous system plays in these cardiac paroxysms is shown by our good results obtained from morphine injections even where there is no pain. Hence the use of morphine seems to be directly in line with the natural resolution of the symptoms, viz., quieting the nervous system, causing drowsiness and relaxing spasm, and thus causing increased peripheral circulation, and in many cases this is the only treatment necessary.

However, we have other problems to solve; we do not dare to give a very full dose of morphine lest we impair the action of the respiratory centre, which is already enough in trouble, and undoubtedly death can be easily caused by an overaction of morphine at this time. The addition of atropine to the injection will of course prevent the depression of the morphine on the respiratory centre, and will perhaps quiet some of the cardiac pain, but will not steady the heart and may stimulate it, and will increase rather than decrease vasomotor tension, though peripheral irritations may be diminished. Hence, a fair dose of morphine hypodermically, with a small amount of atropine if respiratory depression is feared, is exactly along the physiological method of bettering the condition.

The more we study the heart and blood-vessels, the more we see how necessary it is for the heart to have a proper tone to its arterial system in order to act well, consequently we can often hasten the good action of morphine, or rather cause in an entirely different manner the dilatation of the constricted arterioles, by nitroglycerine. If this drug is used hypodermically the dose should be small, not more than 1-200 of a grain. It is, perhaps, better to give the tablet

dry on the tongue, say one every fifteen minutes till the frontal throbbing is complained of, and then to stop, as too much will overdo the dilatation of the blood-vessels and overstimulate the heart. I believe, however, that nitroglycerine thus used to good physiological action, combined, perhaps, with a hot foot-bath, will generally obviate the necessity for venesection by bleeding the vessels into themselves.

I prefer nitroglycerine to nitrate of amyl because the results are more under my control.

Suppose we do not exactly follow the natural history course of the resolution of this cardiac paroxysm, but, because of cardiac dilatation, œdema, or passive congestion of the lungs, or other symptoms of cardiac insufficiency, we decide to help the heart directly. We can do this almost with a grip of iron, and of course I refer to digitalis far and above the queen of all cardiac tonics. The dose of digitalis distinctly depends upon the valvular lesion, and with aortic lesions should never be pushed to a slowing of the heart below eighty beats to the minute, generally given coincidentally with nitroglycerine, so that the peripheral resistance be not increased. In mitral disease, and especially in mitral stenosis, we get splendid results from slowing the heart down to sixty and even fifty beats per minute, so that a patient who has not lain flat in bed for weeks may be found with but one pillow under his head when next seen. The prolonged diastole reaches its best use in mitral stenosis, but it always gives opportunity for better nutrition to the used-up heart. Digitalin is the best form for hypodermic injection, and the dose should be enough not to require repetition in at least three hours, viz., 1-100 to 1-50 of a grain. We must not forget that a patient whose heart has been greatly slowed by digitalis must not rise from the recumbent position even to urinate, until the profound effects have passed off, and a full dose of digitalin will last twelve hours.

The above treatment generally suffices to stop the paroxysm, but if we have cardiac exhaustion, as above shown by

paleness of the face, pinched nose, intermittent reduplicating heart, with frequent beats not transmitted to the wrist, we must then have recourse, besides the treatment already suggested, to strychnine, camphor, and small amounts of alcohol.

Strychnine is our best general stimulant, as well as a stimulant to the arterioles and heart, and should be given with free hand, selecting the dose in our judgment required, be it 1-30 or 1-15, hypodermically, but not to be repeated in at least two hours. The flagging nervous centres are all stimulated to do their best work, to tide over the exhausted period until strength and rest are brought to them by a relieved heart.

One of our best cardiac and brain stimulants is camphor, and this in a saturated solution in olive oil and used hypodermically will generally steady a tired and intermittent heart. This injection of a syringe-ful can be repeated every fifteen minutes for three or four times if needed.

I have purposely left alcohol for the last, for except in small amount I am afraid of it in bad cardiac weakness. The secondary effect of alcohol is always that of a vascular paralyzant, and hence an aggravator of cardiac depression, and right here let me deprecate the wholesale use of brandy or whiskey by the hypodermic syringe in ether or chloroform collapse. Whiskey or brandy by the mouth, but little diluted, stimulates the heart reflexly by its burning impact, but with the hypodermic syringe it should be used only in small quantity, viz., a syringe-ful every half hour or hour for a few doses if the results are good.

It is not the province of this paper to enter in great detail upon the treatment of chronic insufficiency, but allow me to say that in lack of cardiac compensation rest is a *sine qua non*, and as a cardiac tonic nothing equals or approaches digitalis, and with proper care, *i. e.*, occasionally watching the amount of urine passed in twenty-four hours, it (digitalis) can be given for months, and even for years, without trouble. I most heartily believe that every patient under a cardiac

tonic should be seen at least once a month, if not doing very well, and once in two months even if doing perfectly. The physician can then note the rate of the pulse, the tension of it, the tone of the first sound of the heart, the snap of the basic closure, the condition of the bowels, the sleep, the tendency to headache, the tendency to coldness and numbness of extremities, and to nausea or vomiting. We can thus quickly appreciate an excess of digitalis and modify it by reduction, and if we feel that the heart muscles cannot do without a tonic, we can then add, or even substitute, cactus. The latter is a drug, which, if used in good dose (10 to 25 drops of Fl. Ext.), I find to be a good heart tonic, where there is little or no lack of compensation, but where the heart requires a constant toning. Cactus does not tie up the blood-vessels as does digitalis, does not prolong the diastole as does the latter, but strengthens and steadies the heart. We do not have the nausea from it, nor do we have the excretion of urine interfered with, and I wish to emphasize that in a case of lack of compensation where digitalis has restored the compensation, with cactus alone for a short time, or with cactus in combination with digitalis, less of the latter need be given, and most patients can go longer without symptoms of saturation of digitalis, and with a longer period of good compensation, than with any other combination that I have used.

I am accustomed to tell my classes that *strophanthus* acts "just like digitalis, only less so," which epigrammatic description I believe to be strictly true, viz., less powerful as a cardiac contractor, less of a cardiac slower, less of a vasomotor constrictor, less of a nauseant, less apt to diminish the amount of urine.

Sparteïn and caffeïn I often find occasion for using for a short time, but more as a change than to meet a serious indication. I think we cannot be too careful to cut down, or if necessary absolutely prohibit, the use of alcohol, coffee,—and tea in heart cases, and I am not sure that we thoroughly appreciate the intense stimulation to these hearts by coffee,

coffee because it is the most used. If we use coffee wittingly with a definite object we are watching the results, but as a beverage I believe these cases are better off without it. Of all minor conditions the bowels in cardiac cases are the most important, not only from the increased passive condition which constipation gives, but from the increased tendency to bowel infection with its head and stomach consequences. Hence the bowels must be carefully moved every day, with that drug or combination of drugs which will accomplish the best result in the given case with the least disturbance. An occasional small dose of calomel is, I believe, good treatment as relieving portal congestion and as a bowel antiseptic.

For the sake of illustration allow me to quote a case which well shows the results of careful watching of the conditions.

The case is a female aged thirty-eight, with a direct and indirect aortic murmur, and an indirect mitral, with pretty good compensation. She is very easily affected by drugs, and the doses must be small. I copy from my notes. September 23, 1897, patient has had a faint turn, and her heart has not been doing well lately. Examination shows the heart to be weak, and the pulse weak but regular. Treatment, tincture of digitalis, 10 gtt. twice a day, and rest. Four days later the heart is still not strong. Treatment, digitalis increased to 12 gtt. twice a day. At the end of a week the pulse was 62 and firm. She complains of numbness and coldness in the right arm and leg. Treatment, spirits ammon. aromat, 1-2 teaspoonful p. r. n. reduced digitalis to 10 gtt. and gave 10 gtt. cactus (fl. ext.) at noon. Urine O. K. In another week the numbness had disappeared, the heart was doing better. The ammonia was stopped and Tr. digitalis reduced to 8 gtt. a. m. and p. m., cactus continued, viz., 10 gtt. at noon. The next week, *i. e.*, three weeks from the beginning of the record, patient had some head pressure and some asthma (cardiac). Treatment, 1-200 nitroglycerine on the tongue when asthma attacks come on. Digitalis reduced to 6 gtt. b. d., cactus continued as before. Given strychnine sulph. 1-60 tid. On October 13, just one month from the beginning of the record, the whole condition is improved; stopped strychnine and continued digitalis

and cactus as above, viz., 6 gtt. of the former b. d. and 10 gtt. of the latter at noon. February 28, five months from the beginning of this record and four months since last seen, the patient has been doing finely on above dosage, but now she is not as well. Pulse slow but not strong, head all right, no coldness or numbness. Treatment, 8 gtt. digitalis a. m. and p. m., and cactus unchanged. Strychnine 1-60, and a teaspoonful of whiskey tid. One week later, March 5, felt a little cold, otherwise feels better. Reduced digitalis to 6 gtt. a. m. and p. m., and cactus, strychnine, and whiskey continued. March 15, ten days later, doing very nicely. Stopped strychnine and whiskey and continued heart drugs as above, which is the same dosage which went from October 13 to February 28 so successfully, which, by the way, is less than she had during 1896. Since March 15 she has been at the same dosage and doing finely.

This case could be multiplied over and over again, but the description of other cases could only emphasize the fact so well brought out by this one, that good care and careful judgment are needed in these cases of chronic heart-disease, and such being given will always bear good results.

2. Insufficient hearts without valvular lesions.

First, let us consider that ever-increasing bugaboo of "heart-failure." We have the real heart-failure of over-ether or chloroform narcosis, and that due to shock. Here we have a weak, faintly-acting heart, with dilated peripheral blood-vessels, and great loss of heat. If there has been hemorrhage of course nothing can take the place of saline transfusion, and I heartily commend the giving of a normal saline solution, by high injection per rectum, as routine practice after every severe or prolonged operation, whether much blood has been lost or not. It tends to fill up the blood-vessels and reduce the thirst that perhaps for some time cannot be well relieved by the stomach on account of nausea, and also prevents the tendency to kidney congestion by establishing early a free flow of urine.

Our first treatment of this cardiac failure is heat to the extremities and heart, and perhaps to the body, and elevation of the feet and legs to aid in the return of the blood in

the veins, which have lost the force from behind, viz., the elasticity of the arteries by the latter's dilatation. We can also aid the flow of venous blood to the chest by artificial respiration, first by increasing the negative pressure in the chest and then the forcible expiration, giving more force to the aortic impulse. As to drugs, good treatment is an occasional careful whiff of ammonia salts to the nostrils and a hypodermic of strychnine in good dose, atropine in a dose not to be repeated, several injections of camphor as above described, and brandy once or twice, but not repeated in at least an hour. Digitalin may be used with care if the heart rallies, but shows signs of recurring weakness. Electricity can be used if needed.

Now what shall we say for "heart-failure?" Is it a malarial or la grippe nomenclature for an undiagnosed condition, or are we having more and more frequent cases of suddenly, or perhaps chronically, weak hearts, for which there is no, or at least the most careful of us can find no, assignable cause. I think the latter proposition is true, but as I stated in the beginning that we are not dealing with causes here, I will not even venture a suggestion of possible causes; suffice it to say that we are frequently called to treat a weak heart. True heart-failure can occur alone, or, of course, during the progress of various diseases, but its treatment will be generally the same from whatever cause, and that suggested for heart-failure in ether narcosis is perhaps equally applicable to ordinary heart-failure with this difference, viz., that we have the brain with us and will get all of the voluntary help that we can from an increased respiration. Here we get the best results from brandy or champagne by the mouth, and from black coffee if there is no vomiting. Hypodermics of strychnine and atropine and camphor are the reliables, with digitalin if the pulse is fast; if the pulse is slow I believe it to be contraindicated.

A chronically weak heart without valvular lesion is best treated by strychnine and small doses of digitalis or cactus, with, as a stimulant, camphor or ammonia regularly for a

week or two, which I find better than whiskey or coffee. A complete, rigid regulation of the life and habits of the patient is absolutely essential, and a removal, if possible, from the nervous causes which play so important a part in this cardiac weakness and irritability, and are often the forerunners of neurasthenia.

In nervous and irritable hearts, as are typically seen in chronic tobacco-poisoning, nothing can surpass strychnine in full doses, and digitalis in small doses, or full doses of cactus. Weak, irregular hearts occurring from any other cause or condition should be treated on the same general basis as laid down above, modified by the condition present.

I trust that I may have caused enough interest in the physico-dynamics of cardiac insufficiency to lead all of our heart cases to be carefully studied. I cannot but thank you for your courteous tolerance to so well-worn a subject.

THE RESULTS OF OPEN OPERATION IN THE TREATMENT OF RECENT FRACTURE OF THE PATELLA.

By CHARLES PHELPS, M. D.

October 19, 1898.

The treatment of fractured patella still provokes discussion; and varied opinions as to the advisability of resort to operative methods are still held with remarkable tenacity.

At a meeting of the American Surgical Association, held in New Orleans in April of the present year, a paper was read by Dr. Charles A. Powers, of Colorado, in which an effort was made to reflect in some degree the present sentiment of the surgical profession upon this subject. Although the field of inquiry was limited, the method of procedure adopted by Dr. Powers, of obtaining the unpublished opinions of individual surgeons, probably affords a fairly representative view of the present state of surgical feeling as to operation in general. It would seem that a majority of surgeons now favor some form of operative interference; and this deductive conclusion is confirmed by the drift of the discussion which followed. Ninety surgeons who had been addressed by Dr. Powers responded, of whom nineteen declined an expression of opinion on the ground of want of experience in this department of surgery. Of those remaining, nine would operate in all cases in which no contraindication existed, forty-one would operate under specified conditions, and twenty-one in no instance. Of the twenty-one who would operate under no circumstances whatever, eight assign no reason, four in general terms consider the results of non-operative treatment sufficiently good, four prefer the use of

Malgaigne's hooks, one prefers massage, one is satisfied with adhesive plaster, and three fear the danger of septic arthritis and resulting death or deformity. It is probable that a majority of the very considerable number of surgeons who operate, but only in exceptional cases, as well as of those who assign no reason for their preference for a non-operative method of treatment, are deterred by their fear of arthritic inflammation.

The merits and demerits of operation for the cure of fractured patella have doubtless been exhaustively discussed, but there are reasons why I should desire to add to one phase of a discussion which is likely to continue while differences of opinion still exist. In 1890, at a meeting of the Bellevue Alumni Association, I incidentally read the histories in brief of forty-two cases in which I had resorted to a single form of operation, and at the same time exhibited twenty-two of their subjects in all of whom osseous union was demonstrable, after varying intervals, extending from two months to five years. I at that time so fully presented the argument in favor of the form of procedure which the history of those cases seemed to have warranted, that it would be a work of supererogation on my part to recur to the general history of a subject upon which subsequent and still larger experience has left my views unchanged. Since that time, however, the number of cases in which I have operated has been increased to a hundred and five, and to these I may add twelve others which have been done under my supervision by Dr. T. A. Smith, Dr. W. S. Terriberry, and Dr. W. B. Power, recent house surgeons at Bellevue Hospital. This series of operations, involving the free incision of the knee-joint to permit a radical cure of the patellar fracture, is so large that it demands a more formal record than the bare mention it has received in the summary of cases and opinions prepared by Dr. Powers. It is so large, in fact, that the results it has afforded are not likely to be varied in any further multiplication of cases occurring in the practice of the same surgeon; nor can the conclusions

which they necessitate be impugned upon merely theoretical grounds or upon deductions made from limited observation and with imperfect apprehension of conditions and methods.

The determination of the advisability of the treatment of fractured patella by operative measures rests entirely upon the answers which may be given to two questions :

1. Do such measures afford better results than a non-operative treatment ?

2. Do such measures necessarily involve danger to the life or limb of the patient ?

These questions ought each to be susceptible of definite answer.

It is quite certain that the results of non-operative treatment usually leave much to be desired ; the fragments remain widely separated, the limb is more or less deficient in strength, and the liability to rupture of the ligamentous or membranous bond of union, or of the opposite patella, is great. In very exceptional instances osseous union is obtained, or it happens that even with wide separation of the osseous fragments the use of the limb is scarcely impaired ; but such an issue is not to be expected, and its possibility is not to be taken into account in an estimate of the probable termination of any individual case in which reliance is placed upon the use of simple approximating and retentive apparatus. It will doubtless be conceded that ligamentous union, or non-union, is almost inevitable in cases treated by plaster of Paris, Malgaigne's hooks, massage, or similar devices. The reason for this almost constant fact is obvious to every surgeon who by incision of the knee-joint has in any considerable number of cases been enabled to make direct inspection of the parts in recent patella fracture. The interposition of the anterior aponeurotic fibres between the osseous fragments is even more nearly constant than the retraction of the upper fragment by the action of the quadriceps extensor muscle. In the one hundred and eighteen cases in which I have exposed the line of fracture in the open operation the absence of this intrusion of the capsular fibres has been

exceptional. Nothing short of operation can effect their removal, and the insurmountable obstacle to osseous union afforded by the presence of soft tissues between the fragments is a recognized fact in the general history of fractures. Other circumstances are doubtless contributive to lack of satisfactory union; the contraction of the quadriceps extensor muscle may be too obstinate to furnish even approximate coaptation of the fragments without some sort of operative interference; the angular displacement of either fragment may be irremediable without similar resort; and hæmarthrosis with firm coagula may be irremovable before their organization is effected; but the intrusion of the capsular fibres is even then a direct and sufficient cause of failure of osseous union. The shortening of the ligamentum patellæ is in old cases often an insuperable obstacle to coaptation, but in recent fracture it is inappreciable in extent or effect. The ascription of a failure of osseous union to a deficient vascular supply is without reason. The opportunity afforded by the disclosure of the osseous surfaces in the open operation has not only made evident the exceeding vascularity of the patella, but in the one hundred and eighteen cases which afford the basis of the present argument has seemed to indicate the fractured surfaces, rather than the synovial lacerations, as the source of the usual abundant interarticular hemorrhage. The improvement in the use of the limb which in greater or less degree follows a fracture of the patella treated only by manipulation and apparatus is therefore not only generally recognized, but is demonstrably a necessary result of conditions which can be obviated only by the aid of operative measures. They who profess themselves content with such results are certainly contented with less than the best.

The exact results obtained by operation can not be learned from the data afforded by the 711 cases collected by Dr. Powers, as set forth in his tabulation. The termination of 94.9 per cent. is recorded as having been "satisfactory," of 3.7 in more or less complete ankylosis, and of 1.4 in death. The term "satisfactory" in each instance expresses the com-

paratively optimistic mental state of the operator, or the opinion of the tabulator, and is too vague for the purpose of comparison intended. As it is to be inferred that operation was done in all these instances by reason of dissatisfaction with the usual results of non-operative treatment, it may be fair to assume that "satisfactory" meant to the operator something better at least than he obtained without it. The seventy-five cases in Dennis's series, which were of earlier date, and in which the percentage of deaths and accident is somewhat larger, is also deficient in exactness of detail. In order to learn more definitely what really have been the results of operation, I have made specific inquiry of those surgeons in New York who have operated for this injury most frequently, and the results of their cases I have tabulated with my own, which include the forty-two originally published in 1890. This table is as nearly complete as the time at my disposal has permitted.

TABLE OF RESULTS OF OPEN ARTHROTOMY FOR RECENT FRACTURE OF THE PATELLA.

NAME OF SURGEON.	Number of cases.	Apparent osseous union.	Superficial supuration with ankylosis.	Deaths from concurrent disease.
Dr. Charles Phelps.....	118	118	5	
Dr. L. A. Stimson.....	80	80		
Dr. G. R. Fowler.....	38	30	7	1, carbolic acid poisoning.
Dr. W. Fluhrer.....	30	30		
Dr. Stephen Smith.....	30	30	1	
Dr. F. S. Dennis.....	30	29	....	1, delirium tremens and Bright's disease.
Dr. F. Hartley.....	27	27	4	
Dr. J. D. Bryant.....	19	18	2	1, delirium tremens.
Dr. L. Pilcher.....	15	15		
Dr. H. M. Silver.....	9	9		
Dr. B. Gallaudet.....	7	7	1	
Dr. F. Lange.....	6	6	1	
Dr. G. B. Stewart.....	6	6		
Dr. A. J. McCosh.....	5	5		

These cases were all of recent injury. In three, death resulted from intercurrent disease before union of any kind could be effected; and in seven, reported by Fowler, in which suppuration was followed by ankylosis, the nature of union was not stated. In every other instance, even in those in which superficial suppuration occurred and was followed by some notable limitation in the movements of the joint, union was solid, without appreciable separation of the fragments, and, so far as practicable tests could determine, was by bone. I have characterized it as "apparently osseous," since differences of opinion exist as to the measure of proof demanded. Stephen Smith, Fluhrer, Dennis, Fowler, Silver, Gallaudet, Lange, Stewart, and Phelps regard the evidences of osseous union which are accepted in the case of fractures generally as being adequate in this particular instance. Stimson and others, while believing it to be real, do not feel justified in making their conviction absolute without the opportunity, post mortem or otherwise, in each case of direct inspection and examination.

My own reasons for believing in the reality of osseous union may be briefly stated. The essential conditions for attaining this result in fractures generally are: Osseous contact, absolute immobility, and adequate nutrition of the fragments; freedom from septic infection, and the absence of constitutional taint. If all these conditions are fulfilled, osseous union can scarcely fail; and if, after subsidence of the swelling of the soft parts, and an interval of one or two months' use of the limb, no mobility at the line of fracture can be detected, it is not usually if ever questioned. The abundant vascularity of both fragments of a fractured patella is demonstrated in every open operation; osseous contact is readily obtained in recent fractures after the removal of intervening fibrous tissues; absolute immobility is insured by suture and the subsequent application of proper retentive apparatus; septic infection is preventible by the surgeon experienced in aseptic work; and recognized constitutional taint, as of syphilis or cancer, would be an

admitted contraindication for operation in the exceptional cases in which it might be discovered,

The superficial situation of the patella and its free mobility in ordinary cases which have progressed without accident, and when care has been to begin lateral movement early, render its thorough examination after fracture easy and satisfactory beyond that of other bones. I see no reason why different or more cumulative evidence should be demanded to prove osseous union here than elsewhere; nor why in this form of fracture, of all others, the evidence of the senses should be discarded. I am convinced, therefore, that in all cases in which osseous contact is assured, sepsis avoided, and immobility maintained, osseous union will be effected; and I am equally convinced that this is demonstrable by subsequent physical examination if its results are estimated as they would be in any other fracture occurring in an accessible region. I speak now entirely from the observation of my own cases, in none of which has there been reason to suppose that the apparent ossific union was not real. These cases were all subjected to careful examination, with a view to determining the character of the union which had been effected, after the patient had gained considerable flexion of the knee-joint and was able to walk without the assistance of a cane. A very large number were re-examined after the lapse of several months or several years, though I believe that, after the patella has become freely movable, and moderate flexion of the joint can be made, the result of this examination is no more certain after the lengthened interval. In a certain number of cases ossific union was verified by subsequent accident. Two deaths occurred after recovery, in each of which the patient was still under observation and opportunity was afforded for post-mortem inspection. In the first instance, the patient, a man eighty-three years of age, died one month after operation, from an acute bronchitis; in the second, the patient died nearly seven months after operation, from cerebral disease; in both ossific union was unquestionable. In

several other instances I have seen in morgue and dissecting-room subjects, without history, old fractures of the patella united by bone with the silver wire still *in situ*. In four instances in which refracture occurred after intervals of three months, four months, six months, and three years, ossific union of the primary fracture was discovered by the secondary operation. In three instances in which refracture was produced by forcible flexion in cases in which early lateral movement of the bone had been neglected, and functional progress in the second month was unsatisfactory, the snap made by the osseous rent was distinctly audible and unmistakable, though, as such cases do not require secondary operation, ocular inspection was not afforded. In several early cases, when I felt less sure of the nature of the union obtained, unsuccessful effort was made to pass a fine needle into the line of fracture; this failure and the nature of the resistance encountered seemed in some degree to indicate that the obstacle was bone.

The lack of absolute confidence so generally manifested in the ossific character of the union obtained by operation in this fracture probably depends largely upon the fact that in a few instances so-called bony union has been found to be fibrous. None of these instances, so far as I know, has been recent, and there is no evidence that the essential conditions of the more perfect union were realized. The erroneous belief that fibrous union was really bone may have been unavoidable error, or possibly the result of limited experience in the examination of this special form of injury. I may at some time have been similarly mistaken in my judgment, but I can scarce yield my convictions, founded upon general principles, not less than upon what I believe to be careful observation, for no better reason than that somebody else has blundered.

It will be conceded that bony union and contact of the fragments is better than the non-union or fibrous union at long range which usually results from non-operative methods of treatment. If the medium of union be not ossific, it cer-

tainly has the qualities of bone. It is strong and unyielding, rarely breaks, and never stretches; while connecting fibrous tissue lengthens, attenuates and correspondingly weakens. In two cases out of four of refracture the bone gave way outside the original line of fracture, the new formation being actually stronger than the old. Instances of refracture are consequently less frequent if the treatment has been operative, and I have seen no instance of subsequent fracture of the opposite patella. The percentage of my one hundred and eighteen cases in which a fibrous union of former fracture existed upon the opposite side is very considerable.

The functional result, aside from the greater strength of the joint assured, in cases treated by operation in comparison with that of non-operative cases has been somewhat diversely estimated as being much better and as no better at all. I believe it to depend in some degree upon the care given to after-treatment, or to the want of it. I again rely upon the record of my own cases. In those reported in 1890, thirty-six patients out of forty-two were re-examined after an interval extending from four months to five years, and of these, thirty had perfect use of the joint. Two others had declined further treatment after flexion had been carried a little past ninety degrees, on the ground that they were content and further trouble was therefore useless; two received no treatment after the first month; one had sustained a previous fracture of the bone, still ununited at the time of operation, from the effects of which the movements of the joint were already impaired; and one was the subject of fracture of nearly two years' standing in which the fragments could not be coapted, and in which ankylosis was favored. In six cases the patients were removed from observation in from one to three months after operation; in one the movements of the joint were already perfect, and in the others flexion had progressed to a certain degree with every prospect of perfect restoration of the joint if massage and passive movements were continued.

In the seventy-five cases occurring since that report was

published, I have not so carefully investigated late results. In all, with the exception of the five reported as more or less ankylosed as a result of extensive superficial suppuration, flexion had been made to from ninety degrees to a hundred and thirty-five degrees at the time of their discharge from the hospital. I have recently ascertained the condition of twenty after a lapse of time varying from six months to eight years, and in every one bony union seemed to be unquestionable, and the function of the joint was perfectly restored.

The power of *complete* extension after suture of the fragments is invariably restored, whatever may be the degree of flexion attained. If the movements of the joint are eventually in any way limited, it will be in extreme flexion, as at a hundred and thirty-five degrees or beyond. In non-operative cases extension is rarely, if ever, perfect. The comparative functional value of these two opposing movements has been noted by Fluhner.¹ In his words: "Motion in the joint has not the same value throughout the whole range of flexion and extension; these movements of the leg from the line of complete extension are vastly more important through the first forty-five degrees than from that angle onward. This is understood when we reflect that in locomotion the limb with some motion at the joint becomes an uncertain means of support unless the leg can be so extended as to bring the line of support near or anterior to the axis of motion in the joint, thus, as it were, locking it while the limb bears the weight of the body."

A further advantage of operative treatment, of less importance only than the more perfect union and the more perfect restoration of function it affords, is the more rapid recovery which ensues. In my own cases, in all of which coaptation of the fragments was made by direct suture of silver wire, I have always removed all retentive apparatus, began flexion, and permitted the patient to walk with the aid of a cane on the twenty-eighth day. The cane is discarded a few days later. After the beginning of flexion and the restoration of the

¹ Medical Record, 1890, Vol. xxxvi, p. 645.

ability to walk without support, the operative cure may be considered complete. The entire restoration of function in these cases depends upon the patient himself much more than it does in those treated without operation. In general he may return with absolute safety and without protective appliance to the most laborious occupation within the second month. Refracture will only occur from such extreme violence as might have produced the original injury. The estimate of the period of disability after non-operative treatment so greatly varies as to make comparison impossible, if all opinions are to be accorded equal value. Bull recommends the beginning of flexion at the end of the third month, with the use of the posterior splint up to that time. Stimson advises the beginning of flexion during the third month with removal of the posterior splint at night. Wyeth would carefully guard the joint for eighteen months. Some of the surgeons whose opinion was sought by Dr. Powers place the period of return to work at one year, some at six months, some, constituting the larger number, at three months, some at two months, and two at three and six weeks respectively. Two or three of them even believe the period of detention from work to be longer in operative cases than in others. It is probable that the most sanguine have had the least experience. It seems scarcely possible that with the usual somewhat elongated and still soft and extensible ligament of union, patients should be deemed fit for active mechanical employment without protective appliance. Such a belief would require detailed statistical information for its justification, which is yet wanting. The fact that in a majority of instances patients who have been treated by operation are able to resume laborious occupations in the second month, without mechanical support, is established not only by the record of my own large number of cases, but by that of other operators whose cases I have tabulated.

The better results obtained by open operation in the treatment of fractured patella I believe to have been generally recognized from the first; but the fear of possibly fatal

accident has been widespread. At the time my original series of cases was published I believe I was the only surgeon in this city who unreservedly advocated this method. I was conscious that my alleged results of bony union were distrusted, and that my surgical discretion was seriously questioned, though the operation was not then new and was already practised by eminent surgeons at home and abroad. Its absolute safety under prescribed conditions was as demonstrable then as now, and accumulated experience was not wanting. Increasing familiarity with the comparative results of operative and non-operative treatment, a more realizing conviction of the universality of application of the general principles of surgery, and a more perfect confidence in the practicability of absolute asepsis have wrought the change in professional opinion and practice disclosed in Dr. Power's investigation.

It should be clearly understood that certain accidents common to all surgical operations are not to be rated as condemnatory of this special procedure, unless it be conceded that all operative interference is unjustifiable except when made imperative as the only resort which can afford a chance of preserving life. The possible fatality of anæsthetic shock or urinary suppression, the occurrence of tetanus, or supervention of pneumonia or delirium tremens, is no more to be held an argument against this particular operation than against the radical cure of hernia, the correction of facial deformities, or the removal of the appendix vermiformis in recurrent appendicitis. Such an admission would involve a reconstitution of the ethics of surgical operation.

Septic arthritis, septicæmia, death, amputation, and destruction of the joint were counted reasonable possibilities in this operation long after they had ceased to be justifiable accidents, and are even to-day inferentially suggested by some of its opponents. It is scarcely necessary to insist upon the subservience of this operation to the laws of aseptic procedure, or of the dependence of its results upon their observance or neglect. Sepsis is the sole source of danger, and with the

current operative technique is unquestionably preventible. The enormous percentage of septic inflammations and deaths in the earlier tabulations of cases, when the theory was far in advance of the practice of aseptic surgery, has no logical relation to present prognosis. The unfortunate experiences of some of the operators of that period, however, may have made it difficult for them to become reconciled to operative methods, even under the changed conditions which now exist.

Reason and later experience concur in sustaining the contention that, with proper aseptic precautions, operative treatment is entirely devoid of danger to life. In the accompanying table of cases occurring in New York, comprising all those done by operators of the largest experience and such others as have been readily accessible, death followed operation in but three instances: twice from delirium tremens and once from carbolic-acid poisoning. Delirium tremens is a complication of fracture, rather than a result of its treatment; the carbolic-acid poisoning could have been a cause of death only from its internal administration; these four hundred and twenty operations may be said, therefore, to have involved no fatality.

There was never a drop of pus in the joint cavity in any one of my own cases, nor, so far as I can learn, with a single exception, in any of the other cases which I have collected. It has followed that necessity for amputation of the limb has never arisen.

The only accidents reported have been superficial suppurations and ankylosis, which were twenty-one in number. Five of these should be eliminated; one of ankylosis in my own series, accidentally included in a former report, occurring in a case of long standing in which coaptation could not be effected; and four in Hartley's series, also in complete ankylosis (at forty-five degrees), without suppuration, following fractures which were compound. The remaining sixteen were cases of superficial suppuration followed by ankylosis more or less complete. My own five cases were all prolonged and extensive suppurations extending along the intermuscu-

lar planes, and apparently terminating in nearly complete fixation of the joint. I trust that possibly in the course of time some useful degree of motion, if not perfect function, may have been restored. In two instances the patient was infected during operation, and in two subsequently; in the fifth I did not see the patient for a time and was unable to determine the period of infection. In one, at least, the buried suture was at fault, though the joint escaped contamination. It is scarcely worth the saying that all these were avoidable accidents, and should be charged to the account of the operator and not of the operation. In a large and exacting hospital service, with its multiplication of nurses and assistants, it may be sometimes difficult for the surgeon to be assured that all his material is beyond suspicion, and that all the hands about him are immaculate, but in operations of so serious a character as those involving a serous cavity, whether of a joint or of the abdomen, he can plead no division of responsibility as an excuse for failure in asepsis.

The inability to realize aseptic conditions with moral certainty is the only contraindication for a resort to operative treatment which requires special mention. Unsuitable surroundings in private practice, unsatisfactory hospital conditions, or questionable dressings and appliances, if such defaults are irremediable, would render operation unjustifiable, just as it would in any other case in which the danger of serious accident is not outweighed by the greater danger to life from abstention. If, notwithstanding the utmost care, superficial suppuration does occur, it will be trivial, or at the worst will remain extra-articular and occasion only some impairment of the movement of the joint, and even then will be in no wise comparable with the functional disability so much more frequent as a result of non-operative treatment.

Certain depraved constitutional conditions, morbid diatheses, or organic diseases will contraindicate this operation precisely as they would any other of equal gravity. An advanced age of the patient has not prejudiced or prevented osseous union. The fact of coincident fracture of both

patellæ, or the loss of the opposite limb, I have held to be a special reason for operation. The alcoholic habit characterizes a large proportion of the people who suffer this injury; but I have not found the intercurrent of mania to be frequent; its preliminary indications would at least suggest delay in resorting to any operative procedure.

I have adhered to the form of operation which I have practised from the beginning, and which I described in 1890: free lateral incision, ablution of the joint by irrigation, and, after removal of the interposed fibrous tissues, coaptation of the fragments by silver wire, and closure of the joint cavity by soft sutures through its fibrous covering. It is also the operation done by Fluhrer, Dennis, and others. It has been modified by making the incision vertical, and in Stimson's cases still further by omitting the suture of the fragments and depending upon suture of the periosteal or fibrous structure for coaptation and retention. It is unnecessary, and apart from the present study of the results of open operation as a general method of treatment, to institute any comparison of the merits of different forms of procedure. It is sufficient for me to mention my own reasons for preferring a particular one.

A free lateral incision, if the fragments are to be sutured, permits the more thorough ablution of the joint cavity, the easier and more perfect coaptation of the fragments, and the more accurate insertion of the protective sutures; it also facilitates operation and diminishes the possibilities of infection. It is unobjectionable, since the chances of primary union are quite as good with a long as with a short incision; and the superficial cicatrix soon becomes movable, and within a year or two is practically obliterated. Direct suture of the fragments insures their firmer contact and adds to the strength of union at an early period—at a time while comparatively weak it is yet necessarily subjected to the strain of passive movement. The use of silver wire in place of a soft suture not only adds to the strength of union while still immature, but, if the wire has been passed through flame at

the time of operation, removes the last possibility of deep infection. If the twisted wire, after having been cut short, is turned down and thoroughly hammered into the osseous groove of the line of fracture, and afterward covered in by the deep sutures, it never requires subsequent removal; it causes no superficial irritation, and may be found post-mortem after the lapse of years unchanged and incorporated in the new bone. The deep or protective sutures are essential to the safety of the joint if by any chance the superficial wound becomes infected. The complete removal of blood and clots from the cavity of the joint is important, since, if permitted to remain, blood-clots organize and seriously hamper its future movements, or, at least, greatly increase the labors of the surgeon in their restoration. As the removal of the fibrous tissues and coagula from the osseous surfaces, exposed by fracture, excites fresh hemorrhage, which continues after the wound is closed, temporary drainage of the joint is of great service. I drain from its outer and inferior angle and remove the tube in twenty-four hours or less. During one year in which I discontinued this precaution, I had such unusual difficulty in re-establishing articular movement that I reverted to my former practice.

The secondary or after treatment I regard as absolutely essential to the attainment of the best results of the operative method of treatment, and its neglect, I am certain, is responsible for its comparative failures in the hands of some operators. Movement of the joint should be begun early, and the case kept under observation until flexion has been carried beyond ninety degrees, as, left to his own devices, the patient is not unlikely to be content with just sufficient motion for easy locomotion. Lateral movement of the patella should begin at the end of the third week; if neglected, the bone may become fixed to the femoral condyles, and be liable to refracture in the effort at flexion. I usually begin the joint movement on the twenty-eighth day—Stephen Smith, one week earlier. In both lateral movement and in flexion firm support should be given to the

upper and lower borders of the bone. The time required for perfect re-establishment of these movements varies greatly, and is dependent upon the assiduity of the surgeon, the intelligent coöperation of the patient, and accidental conditions presented by the joint itself. In general, it may be estimated at from one to two months after the beginning of flexion. Early neglect, the indifference of the patient, complicating arthritis from concurrent injury of the joint, the retention and organization of blood-clots, or much inflammatory thickening of the extra-articular tissues may extend this period. If the case proves obstinate, recovery may be expedited by the use of massage and other manipulation by a skilled masseur, or even by forcible flexion and stretching of adhesions under the influence of an anæsthetic. If extensive suppuration has not occurred, the function of the joint can always be entirely restored by sufficient and well-directed effort.

The time predicted by Dennis has already arrived when the "final verdict" may be safely rendered. The number of cases which have been subjected to operation is quite sufficient to satisfy the reasonable minds of surgeons that it is neither "an unsafe nor an unjustifiable procedure." There certainly is "evidence," which in 1890 Bull conceived to be wanting, "that the ultimate results have been better than those of non-operative methods." Experience has amply confirmed the logical deductions from positively established premises. The last word may yet remain to be spoken. Operation may be bettered in its details; results may be made more perfect; but nothing can be added to perfect an argument already complete, and no further multiplication of cases can more absolutely demonstrate that which is already irrefragably proved.

NOTE.—In three cases subjected to operation in October last, I began flexion of the joint at the end of the third week, as suggested by Dr. Stephen Smith. I think the restoration of function was a little more easily and rapidly accomplished by this earlier interference.

A SHORT PAPER ON RICKETS.

By CHARLES ALLING TUTTLE, M. D., New Haven, Conn.

Read by title, October 19, 1898.

Rickets is by far the most frequent cause of all deformities which have come under my observation. For this reason and because comparable with its importance there is too little time given it in the ordinary medical course, I may be pardoned for asking your attention to some special observations on a number of cases (25 in all) which I have seen recently.

First, that we may have a common footing, let me give the definition of rickets which I have been accustomed to give each year to my class in orthopedic surgery at Yale, viz.: Rickets is a constitutional malady acquired through mal-assimilation, characterized by impaired nutrition and alteration in the growing bones, and terminating spontaneously after an indefinite period. This definition, although somewhat cumbersome, I believe to be the best formulated up to the present time.

Rickets is found in every part of the known world, but is especially common in the cold and moist climates. It affects particularly the poor of our great cities where hygienic conditions are the most unfavorable, where even light, ventilation, and good nourishment are unobtainable, and where the food, primarily of poorest quality and insufficient quantity, is carelessly and inefficiently prepared.

The first and most striking pathological condition found in rickets is in the bone, especially in the epiphyseal junction of the long bones and ribs. Their ends show early a tendency to increase in size and prominence out of all proportion to the normal; are soft, tender, yielding to pressure, and bend under superincumbent weight or muscular contraction. Investi-

gating the cause of the changes in bony contour and quality, the periosteum is found to be thickened and congested, and together with the underlying bone structures infiltrated with a spongoid, jelly-like fluid. As the direct result of these pathological conditions there follows imperfect and delayed ossification and an arrest of the deposit of inorganic matter in the surrounding bony structures.

The complete series of changes which the bone undergoes in rickets, has been the subject of minute investigation by Foucray, and the results thus formulated:

1. Stage of rarefaction or congestion.—This is also called the stage of effusion. The bone is dark in color, soft and tender, but not deformed.

2. Stage of softening and swelling, also called the stage of deformity, because in this period the twisting and distorting of the epiphysis occur and the diaphyses are curved, if at all.

3. Stage of consolidation or sclerosis. Here the bone previously deficient in inorganic matter returns to the normal constituency or may surpass the percentage of lime-salts in the normal bone.

Rickets may be partial or general, viz., may be confined to one or two bones, or one or two extremities (usual in adolescents), or may attack the whole osseous system (the common form with infants). Again we might divide it for conveniences of description and study as to the time of its appearance, into four periods,

1. Intra-uterine rickets, due to hereditary influences and conditions (primary error in the germ, etc.), with malnutrition of the foetus.

2. Infantile rickets, showing itself from the second to the seventh month.

3. Adolescent rickets, seen in nephritis and other wasting and chronic diseases.

4. Senile rickets, due to the devitalizing influences of age, rapid child bearing, and dissipation.

The onset of rachitis is insidious to the last degree. It is only after an extended period of vague general symptoms,

such as slight fever, diarrhœa, disturbances of digestion, tendency toward catarrhal affections, profuse perspiration, etc., all of which might be significant of tuberculosis or syphilis, that the general nutrition of the body diminishes and the alterations in the bones appear.

What then is the underlying cause? All writers agree that there is a deficiency in the percentage of lime-salts in all cases, but to account for this, various theories have from time to time been proposed. There are to-day, however, only five that have any weight of authority. These are:

1. The so-called mineral theory, advocated by Virchow and Jenner. This presupposes a deficiency in the supply of the mineral constituency from the blood, and makes the lessened percentage of lime-salts in the blood the essential lesion.

2. The acid theory, championed by Foucroy, assumes the primarily normal calcified bone to be deprived of a portion of its lime-salts by some substance in the blood, such as carbonic or lactic acid.

3. The vaso-nervous theory of Mayor, reiterated by Hoffman and Allen and later by Perry, assumes it to be due to some morbid condition of the nervous system, which exerts some inhibitory influences upon the spinal cord.

4. The microbic theory, which contends for the microbic nature of the disease, was proposed by Mircoli, and is still stoutly contended for by him. He believes that the disease is produced by the action of the ordinary pyogenic organisms upon the osseous and nervous system. This theory, while in keeping with our modern pathological tendencies, has little else than theory and animal experimentation to support it.

5. The most plausible is the so-called inflammatory theory. This maintains that the cause is primarily a chronic inflammatory condition beginning in the bone-forming tissues, and has to-day the most authoritative endorsement. There can be no question but that rickets is due to disturbed nutrition from the arterial blood and the changes in the long bone to excessive vascularity.

The osteal changes occur first in the cranial bones and

ribs, then in the radius and ulna. Later, pelvic deformities are not uncommon and are of much importance in female children; occasionally the vertebra and intervertebral cartilages are affected with resulting spinal curvature. In the early stages, rickets is frequently mistaken, and it is at times impossible to make a diagnosis before deformity appears. It is liable to be mistaken for chronic diarrhœa, rheumatism, syphilis, general malaise or malarial toxæmia. In all such suspicious cases the deformity should be carefully watched for, and during the time an expectant dietary rigorously carried out. Early syphilis and early rachitis bear a striking resemblance, but with the appearance of the deformity there need be no further question, for the osseous inflammation of syphilis is not only not confined to the epiphysis, but seems to have a predilection for the shaft.

Prognosis.—Under proper treatment the prognosis of rickets is good. The evolution is a long process, accompanied by a slow progressive impairment of the general nutrition and a resulting anæmic and marasmic condition requiring especial care. But the innate tendency of the disease is towards a spontaneous cure which is reached only after years, though its course, under proper conditions and treatment, may in some cases be abridged to a few months. Serious complications, from which death may result, may occur at almost any stage of the disease. These are laryngismus stridulous, pneumonia, diarrhœa, bronchitis, hydrocephalous, and amyloid degeneration of the viscera. Certain inherent conditions of the mother predispose to rickets, and when they exist render the prognosis less favorable. These are ill-health, malnutrition, and disease of the mother during pregnancy; numerous or multiple pregnancies; age of mother at birth of child (40 or over); lactation during pregnancy; heredity and syphilis.

Treatment.—The treatment of rickets is prophylactic, medicinal, mechanical, and operative. The institution of preventive measures is a matter of first importance, and by simple means directed to the above ante-partum causal factors in

the mother, rickets may be prevented—in a large proportion of cases. Prophylaxis also embraces the appropriate feeding and hygienic care of the child. During the period of gestation the general health of the mother should be kept to the highest possible degree. Free from care and worry, she should live in the best possible hygienic and sanitary surroundings, with abundance of fresh air, exercise, and plenty of well-prepared food. The common fad of American mothers to escape nursing their children for the first flimsy excuse, cannot be too strongly condemned, but if, after a thorough and conscientious trial, nursing be found impossible, the child must be hand fed,—an unfortunate condition, alike for child, mother, and physician. In my hands no artificial food is comparable with good cow's milk. This, sterilized or pasteurized and diluted in proper proportions with oatmeal or barley gruel, or sterilized water with the addition of a few drams of lime water, produces an artificial food at once cheap, easily procured and prepared, and efficient. Babies kept upon this usually become robust and hearty, and with much more resistant power to the diseases of childhood than the fat yet anæmic babies of the factory prepared foods. The hygienic care of the child consists of a daily bath in tepid salt water, followed by vigorous rubbing, warm, light woolen clothing, plenty of high, dry, out-of-doors air, and good sanitation in the house.* Such environment and feeding will almost surely forestall any predisposition which could possibly exist.

The medicinal treatment, while secondary to the hygienic and diatetic, is yet of quite measurable value. The general condition should be improved by cod liver oil, and so great an improvement has been wrought by it alone that some writers considered it a specific. This or maltine, either given alone or in combination with the lacto-phosphate of lime, is certainly productive of good, yet I have obtained my best results from *oleum phosphoratum* as recommended by Jacobi. This I give before eating and syrup of the iodide of iron in appropriate doses after. These are usually well borne, and

in many cases an improvement is noticed after one week. In the few cases in which it has been necessary to discontinue this treatment after a few weeks, I have used Fowler's solution in the meantime and returned to the original prescription after the shortest possible interim.

If, now, all these measures have been neglected or inefficiently used, and the child has been allowed to go untreated until he is emaciated, anæmic, marasmic, and deformed, a condition is presented which will require at our hands as orthopedists, not only hygienic and diatetic supervision, but in addition, mechanical and perhaps operative treatment.

It is not my purpose in this paper to discuss any of the various mechanical devices for the prevention or cure of rachitis deformities, or to rehearse any of the numerous operative procedures which are at our command. Suffice it to say, that in the correction of these deformities we see some of the most brilliant results of modern surgery. By and through them, unfortunate, decrepit, deformed, and dependent persons are made to walk upright, are relieved from much physical and psychical pain, and made useful, self-supporting members of the community.

NEURALGIC AFFECTIONS OF THE HEAD.

By GUSTAVUS ELIOT, M. D., of New Haven, Conn.

October 19, 1898.

To-day, improved methods of examining the various organs of, and the physiological and pathological products obtained from, the body, enable the physician to form more exact opinions in regard to most diseases than was possible twenty years ago. It is not strange that those functional disorders which furnish few data for exact conclusions are somewhat neglected. In this class an important place is occupied by painful affections of the peripheral and central nervous systems, which are not associated with well-understood pathological changes. Many of these functional nervous disorders, which are characterized by pain, are classed as neuralgias. This term implies a painful affection of a nerve. In every part of the body nerves abound, and consequently it is natural that neuralgia should be of universal distribution. But experience teaches that certain nerves are affected with especial frequency. Those forms of neuralgia, which are considered most typical, are observed in certain superficial nerves,—the supraorbital, the intercostal, and the sciatic. The nerves supplied to the deeper organs—the heart, stomach, and intestines—are, however, not infrequently affected.

Of the different uncomfortable sensations of which our patients complain to us general practitioners, no one is commoner than pain in the head, or headache. Not only is it a symptom of many general and local diseases, but it frequently occurs, so far as can be determined, independently of such diseases, and these cases come to be regarded, practically at least, as examples of an independent disease.

The truth of this statement is confirmed by the facts that several independent treatises have been written upon headaches, and that in many text-books on practical medicine and neurology, special chapters are devoted to the description of various forms of headache.

In my student days, twenty years ago, the descriptions of the different varieties of headache were extremely confusing, and it cannot be asserted that the subject has, even at this late day, been entirely cleared up. True, in certain directions considerable light has been shed, but the elucidation of these varieties of the affection seems to have left the others in an obscurity, more pronounced by contrast. For instance, incalculable relief has been afforded to many sufferers by the correction of refractive errors. So striking have the results been in some of these cases, that the only advice many practitioners give to patients who complain of chronic headache is "have your eyes examined." It would almost seem that these physicians consider headache as belonging to the domain of ophthalmology, rather than to that of neurology. A feeling of this kind has led to the neglect of these cases by many physicians so that, if treatment of the eyes does not benefit, the patients are likely to be allowed to endure their suffering unaided. These cases offer to the general practitioner a rich field for careful observation and study, with the object of clearing up some of the uncertainties and difficulties with which they are surrounded.

There are three forms of headache of which we hear a great deal, and of which much has been written. One is the headache from eye-strain, another is migraine, and a third is neuralgia of the various nerves about the cranium. Certain examples of each of these classes are more or less closely related to the other classes. For instance, certain cases of migraine are unquestionably aggravated by defects of the eyes, and are greatly relieved, although usually not entirely cured, by overcoming these defects. Other cases of migraine partake more or less of the character of neuralgic affections at certain periods in their course. For instance, a patient,

subject to occasional attacks of migraine, may, under certain physical conditions, become subject to frequently recurring attacks of neuralgic pain in certain branches of one of the cranial nerves. Of course these three more-talked-of varieties do not embrace all, or nearly all, the varieties of headache observed in practice. It is to the more strictly neuralgic forms that these remarks will be limited.

Neuralgic affections of the head are of almost infinite variety. They include both those which are, according to our present views, the most typical forms of neuralgia, and those whose neuralgic character it is exceedingly difficult to determine with absolute certainty. The common forms of supraorbital neuralgia are the most frequent, and usually present those symptoms which are generally regarded as most characteristic of neuralgia. These are the remissions,—the pain lasting several hours and then ceasing; the periodicity,—the pain recurring at approximately the same hour on successive days; and the tenderness on pressure at certain parts of the nerve. Less common forms are those in which the temporal, posterior, auricular, or occipital nerves are affected.

The various forms of neuralgia are limited to one branch, or a few branches, of the cranial nerves, all easy of recognition. But on the other hand there are several kinds of headache which seem to present some of the characteristics of neuralgia, which cannot properly be classed with the more typical forms of the disease.

Anstie regarded migraine as a form of neuralgia, but this view has not been generally accepted, and there are several reasons why it is untenable. Perhaps the most important is that the paroxysms of migraine ordinarily occur at tolerably long intervals during many years, whereas neuralgia, during an attack, is present every day for a number of days or weeks, and then disappears entirely, although it may return after intervals of varying lengths, perhaps months or years. At the same time it must be remembered that, as Dr. J. J. Putnam has pointed out, some cases of supraorbital neuralgia seem to change gradually into true migraine.

The question naturally arises whether the pain in the head due to ocular troubles is a form of neuralgia. It seems to me that it ordinarily is not, although there undoubtedly are a few cases, in which the pain is so definitely limited to a particular nerve, that it is impossible to deny the neuralgic character of the affection. The chief element in headache due to errors of refraction and accommodation is fatigue. The general appreciation of this fact is indicated by the common expression, eye-strain, used in referring to these cases.

Two important factors are concerned in the etiology of a large class of the neuralgic affections. One is a depraved condition of the blood; the other, an exhaustion of nervous force. Anæmic persons and those exhausted by overwork, worry, dissipation, or disease, are predisposed to attacks of neuralgia. Both of these conditions are present in many of the patients who suffer from so-called eye-strain. But the facts, that in these cases the pain is diffuse and obviously due to prolonged use of the eyes, lead to the logical conclusion that most of these cases are not true neuralgia, although it must not be forgotten that a latent tendency to neuralgia may be brought into prominence by this cause.

The headaches due to constipation and dyspepsia are not, as a rule, entitled to be classed as neuralgic, because of their lack of persistency when the functions of the digestive organs are restored to their normal condition, and because they are not limited to particular areas of nerve distribution. Neither should those due to catarrhal inflammation of the mucous membranes be included among the neuralgic disorders, because they are constant and not limited to particular nerve areas. Obviously the headaches which accompany fevers and inflammatory affections are also to be excluded from consideration in this connection.

Between the most typical forms of neuralgia affecting single superficial nerves, on the one side, and headaches due to migraine, eye-strain, disordered digestion, catarrhal inflammation, and febrile disorders on the other, most general practitioners occasionally meet cases of more or less persistent

pain in the head, which do not seem to be of either of these groups, but which, after careful observation, will be found to have some of the characteristics of typical neuralgic affections. These atypical forms of neuralgia, although occasionally seen by most physicians, are inadequately described by most textbooks; yet they are certainly deserving of more careful consideration than has generally been accorded them. By studying such cases at the different stages of their progress, and comparing their symptoms with those of more typical cases, it is possible to discover certain characteristic features common to both classes, which afford valuable assistance in determining the nature of atypical forms.

The histories of a few cases will illustrate my meaning:

I. *Case of Temporal and Supraorbital Neuralgia*.—Mrs. S., 48 years old, had neuralgia twenty-four years ago, and has had it several times since. The last attack was eight years ago.

July 22, 1898.—For over a month she has had sharp pain in the left temple and over the left eye. For the last three days it has been very severe. The left eye becomes red, and there is profuse lachrymation. The pain extends down into the teeth.

July 23.—The pain has been constant since eight o'clock yesterday morning. Some days the pain comes at nine o'clock in the morning, and some days later. Five-twelfths of a grain of morphine-sulphate was injected subcutaneously. This afforded considerable relief, but the pain did not entirely cease.

July 25.—There was some pain from nine to eleven o'clock in the morning. On the next day, the pain was a great deal better in the morning, but at noon there was a little sharp pain in the left temple, which was more severe between one and five o'clock in the afternoon. On the following day also, there was considerable pain from one to seven o'clock in the afternoon.

July 28.—There was some pain from noon to three o'clock, and also from five to ten o'clock in the evening.

July 31.—There has been no pain during the last two days.

This is unquestionably a case of neuralgia and closely resembles the most typical examples. The localization of the pain to particular nerves on one side of the head, the recurrence of the attacks at intervals of years, the remission

of the pain, and its exacerbation at certain parts of the day, are characteristic features.

II. *Case of General Neuralgia of the Head.*—Mrs. W., 75 years old, has suffered from organic disease of the heart for many months.

May 14, 1898.—For almost two weeks she has had pain about the head; for two days it has been constant and severe. The pain is located “all around the head,” in the neck, and down the left arm to, but not below, the elbow. The tongue is coated and the bowels are constipated. One week later there had been no improvement as regards the extent and severity of the pain.

May 30.—The pain in the head is still severe. It is worse toward evening and during the night. The pain also persists in the neck and left arm, and she cannot raise her arm.

June 5.—There is still some pain through the head, back of the ears, and sometimes in the forehead and eyes. It comes and goes. From this time the pain gradually became less constant and less severe, but did not entirely disappear until the middle of July, when she declared that her head felt better and did not trouble her much.

In this case there was no history of previous attacks, but the facts that the pain showed a tendency to extend from the head in the direction of certain nerves, that the pain was not constant, that it was worse at certain hours of the day, that it changed from one part of the head to another, and that it entirely disappeared after ten weeks, indicate positively that the pain was neuralgic in character.

III. *Case of General Neuralgia of the Head.*—Mrs. C., 30 years old, was delivered of her third child on September 16, 1898. Four weeks later she stated that she had had neuralgia in her head more or less for two weeks. The pain is all over the head, and in the throat and back of the neck, and also in the teeth. The head feels sore. The pain is generally worse during the forenoon. It becomes severe after she has been about the house for a time, and gradually diminishes toward four or five o'clock in the afternoon. She has not generally felt the pain on waking, but during the whole night it had been so severe that she could not sleep, nor even rest her head upon the pillow, and it still continued in the

morning. She has the pain nearly every day, and sometimes it comes on after she has retired. In the evening of this same day it was reported that the patient had suffered with severe pain since eleven o'clock in the morning. At first it had affected the entire head, but later it became more severe on the right side, and especially in the lower jaw on the right side, in the right temple, and in and back of the right ear. The sulphate of morphine was prescribed in doses of one-sixth of a grain, to be repeated every hour until relief was obtained, and on the following morning the patient, having taken four doses of the medicine, felt very much better. After a few days the pain entirely disappeared.

The exacerbations of pain, its extension to the face and neck, the tenderness of the scalp, and the prompt disappearance of the pain after active treatment was commenced, indicate that this also was a neuralgic affection.

Briefly, the conditions which point to the neuralgic character of a painful disorder affecting the whole or a part of the head are the absence of fever and circulatory disturbances, the absence of catarrhal and digestive disorders, the occurrence of exacerbations of pain on successive days, a tendency of the pain to extend along certain nerve tracts and to change from one part of the head to another, tenderness of the scalp in certain parts of the areas of pain, ultimate complete recovery from the attack, and, in some cases, a repetition of it after an interval of considerable length. Such attacks are not necessarily confined to the branches of a single nerve, nor even to one side of the head, but may involve the entire head, or may include both sides of the frontal, parietal, or occipital regions.

With regard to treatment, little need be said. If the neuralgic character of the disorder is recognized, the treatment which usually proves efficient in other forms of neuralgia will be found useful. If the patient is seen while the pain is severe, nothing will afford so great and so prompt relief as the hypodermatic injection of sulphate of morphine. For continuous use, the sulphate of quinine and gelsemium are of great value. The former may be given in five-grain doses

repeated every fourth hour, or in ten-grain doses at night and in the morning. The tincture of gelsemium may be given in fifteen-drop doses repeated every fourth hour, or the fluid extract, in five-drop doses, at the same intervals. Rest and hot applications to the head are valuable palliative adjuncts to medicinal treatment. All the organs should be encouraged to perform their functions as perfectly as possible, so as to promote the general nutrition of the body, and this should also be aided by the administration of such blood and nerve tonics as arsenic and iron.

INTRODUCTION TO THE DISCUSSION OF INTESTINAL OBSTRUCTION.

By PARKER SYMS, M. D., of New York County.

October 19, 1898.

MR. PRESIDENT AND GENTLEMEN:—There is no pathic condition of more importance than that of intestinal obstruction; and if the discussion of this subject, which I have the honor to introduce, shall succeed in adding to our knowledge concerning its diagnosis and treatment, or in emphasizing some facts already known, the time and labor expended by the various contributors for this occasion will have borne good fruit.

Acute intestinal obstruction is an absolutely curable condition if promptly recognized and properly treated, but it must be reluctantly confessed that its rate of mortality as now recorded is very high, and that this is owing to the fact that it is too seldom promptly recognized and too frequently improperly treated. Hence it will be seen that a more widespread and thorough knowledge of this condition will lead to the saving of many lives otherwise sacrificed.

The chapters on the causes of intestinal obstruction and the description of their mechanism will bring out the fact that it is a mechanical condition, and therefore should be combated by mechanical means; also that it is a condition demanding prompt relief.

Too often it happens that when a practitioner sees a patient with intestinal obstruction, either through insufficient examination or from want of knowledge of the salient principles which govern the recognition and treatment of intestinal obstruction, he puts the case aside as one of simple constipation with indigestion, and orders a cathartic, assuring

the patient and his friends that a few hours will see him all right. As a matter of clinical observation, the symptoms of acute intestinal obstruction are very different from those of simple constipation, and in the vast majority of cases a diagnosis will be readily made if the case be viewed deliberately and comprehensively. Nearly all cases of acute intestinal obstruction are the result of some mechanical cause which produces strangulation of a loop of the intestine, whereby its blood supply is so cut off that necrosis necessarily results. This is a very grave condition, and is attended with symptoms which are not easily mistaken. When an intestine is thus incarcerated, and strangulation of a loop is going on, there is always present, to a more or less marked degree, that condition which is known as abdominal shock. In simple constipation with indigestion, and ptomaine poisoning, patients may be very ill and greatly prostrated, but the difference in character rather than in the degree of severity of the symptoms, will make it possible, in the majority of cases, to differentiate between mechanical intestinal obstruction and a functional derangement.

One other cause of delay in bringing cases of intestinal obstruction to operation, is that physicians too frequently have an unaccountable dread of a surgical operation. Conscientiously feeling that he will be serving the best interests of the patient by avoiding operative procedures, he wastes valuable time, and does much damage besides, by administering doses of active cathartics. For, let us consider the condition in a typical case: one, for instance, where a loop of intestine is surrounded by a strangulating band of unyielding fibrous tissue, the incarcerated portion becoming more and more swollen by the retention of its blood and the resulting oedema; here the condition is analogous to that of a limb to which is applied a rubber tourniquet. In each case gangrene will result if relief is not obtained, but it would be as wise to attempt to remove a tourniquet by the administration of calomel as to attempt the relief of a strangulated intestine with cathartics. In fact, in the former case, less injustice

would be done, for at least it would have the merit of doing but little harm, while in the case of intestinal strangulation the administration of purgatives not only does no good, but necessarily tends to increase the danger to the patient.

A properly conceived and performed surgical operation is the one treatment for intestinal obstruction, and the nature of the pathic conditions attendant makes it imperative that surgery should be resorted to at the earliest possible moment.

The study of the causes and mechanism of acute intestinal obstruction discovers a variety of mechanical conditions which act to suddenly diminish or occlude the calibre of the intestine. This is accomplished either by constricting a single segment of the intestine, or a loop of the intestine; by a distortion of the intestine; by the incarceration of the intestine, owing to its escape through an aperture or to its telescoping itself as intussusception. To these causes must be added occlusion of the intestine by the impaction of fæces, gall-stones, intestinal stones, foreign bodies, etc. All those forms in which the intestine is directly compressed from without by bands of adhesions, or by partial escape through some normal or abnormal aperture, are mechanically the same as is the condition of a strangulated hernia.

The study of the causes and mechanism of chronic intestinal obstruction will show the condition due, in the main, to some mechanical condition which gradually diminishes the calibre of the intestine. In this group will be found neoplasms within, without, or adjacent to the intestine; strictures of the intestine due to various causes; constriction of the intestine by broad bands or adhesions which do not at once occlude its calibre; distortion of the intestine, lessening the size of the canal; intussusception without strangulation; some cases of impaction of fæces or foreign bodies, etc. Of course, this subject does not include chronic constipation except when it has resulted secondarily in mechanical obstruction of the intestine.

A study of intestinal obstruction due to impaction of fæces, gall-stones, foreign bodies, etc., shows that the result

is brought about in many instances as an acute obstruction. It is a well-known fact that impacted masses may lie in the intestine for an indefinite time without producing absolute obstruction. In fact, there is no doubt that such cases frequently continue for a great length of time without causing symptoms leading to their discovery. In such a condition, when the bowel is partially occluded, and yet, after a manner, performing its proper function, little need be added to the accumulation to make it a completely obstructing mass; or some pathic change may take place in the wall of the intestine itself, so diminishing its calibre that it ceases to be more than large enough to hold the impaction, and complete obstruction is the result. This class of cases presents more difficulty in diagnosis than does any other form of intestinal obstruction, and the very fact that its mechanical cause consists in the lodgment and impaction of what we may call a foreign body within the intestine, and not to a change in the structure of the organ, nor to a diminution in its calibre, makes this class of cases an exception to the general rule, in that these cases may not infrequently be relieved by medication; but even here, this is exceptional when the case has changed itself from one of impaction with constipation to one of actual occlusion, with all the symptoms of one of the more classic types of chronic or acute intestinal obstruction. Of course, this class of cases does not so readily result in gangrene of the intestine as do the varieties caused by constriction from without, but it does result in pathic changes of a serious nature calling for cautious medication. And it must be borne in mind that it is almost impossible to make a diagnosis of this form of obstruction, as distinguished from one of the various forms which result in strangulation of the intestine. For this reason it is unwise to give cathartics, even when an obstruction due to impaction is suspected. In this, and in all forms of intestinal obstruction, it is proper to make every endeavor to move the bowels by means of high enemata. Of course, the bowel below the obstruction will be emptied by this treatment, but unless the obstruction is

removed, the symptoms will continue as before. Enemata may relieve cases of impaction, volvulus, and intussusception, but they cannot be expected to relieve cases of strangulation of the intestine.

In the chapters on the diagnosis and treatment of intestinal obstruction, there will be brought out a description of the prominent and characteristic symptoms of the various forms of this condition. It will be shown that this disease is one whose symptoms correspond very logically with its patho-anatomical conditions; and the same may be said of the means necessary for its relief.

In the acute cases attended by strangulation, the onset is sudden, the symptoms severe, and should not be misleading. In chronic cases the course is more insidious and less defined in character, but the long and consistent history of the case should make it possible to diagnose the conditions. Of course, a case of chronic partial obstruction of the intestine may at any time suddenly become one of complete acute obstruction.

Having made a diagnosis of intestinal obstruction, the indications for treatment are very clear. It should be recognized as a condition which must be relieved, and that promptly. At first, we attempt to relieve the bowel of its obstruction by the use of high injections, but if not speedily successful, surgery should be promptly employed. It is most important that operation should be undertaken before the local and general conditions have so changed as to render the patient's prospects of recovery very small.

In a classic case of acute obstruction the operation, if done early, may be performed on a patient full of vigor and vitality, and may consist of a simple laparotomy and the division of a band of fibrous tissue. If delayed too long, it will have to be done on a patient in a dying condition, and it may have to consist of resection of a segment of gangrenous intestine, or some other grave and tedious procedure.

Of course, a patient may be seen for the first time when the obstruction has lasted so long that but little can be made out by examination, and the history obtainable may be so

vague as to be of but little use; but even then examination will show whether the case is one of intestinal obstruction, intestinal perforation, or of peritonitis, and in any one of these conditions laparotomy is the treatment.

The subjects of intussusception and volvulus are of sufficient importance to be treated in a chapter by themselves. Intussusception may be of either a chronic or acute variety. It may cause complete or incomplete occlusion of the bowel.

Volvulus is a comparatively rare cause of intestinal obstruction. It consists of a peculiar twisting of the bowel on itself in such a way as to cause complete occlusion. It belongs to the acute variety, and is always a very grave condition, resulting fatally, as far as we know, unless relieved by surgical procedure. A positive diagnosis of volvulus without opening the abdomen is impossible, so it is not possible to say that we have cured a case by means other than operative. The special measures necessary in the treatment of these conditions will be enlarged upon in this chapter, and will be elucidated also in the chapter on operative technique.

In connection with a study of intussusception, one of the most important things is to learn how to recognize the chronic form, which does not cause complete occlusion of the intestine, for if this cause be recognized before the patient is in a condition of grave and immediate danger, a great advantage will have been gained.

The chapter on the technique of operative treatment of intestinal obstruction will treat in detail with the various operative procedures which should be employed in dealing with the different patho-anatomical conditions already described.

Of course, laparotomy is necessary in all instances as a means of arriving at the proper field of operation. When the involved region is discovered and exposed, then the proper form of operation is to be decided upon and performed. According to the nature of the case this may be the simplest form of operation, or it may necessarily be one of the most elaborate and complicated procedures known to modern surgery.

In some instances it may be necessary only to remove the

cause of the obstruction, as, for instance, a constricting band; again, it may be necessary to add to this some special treatment of the portion of the intestine involved, as, for instance, an immediate resection. Again, the patient may be so exhausted that it is impossible to do more than relieve the distended intestine by the immediate formation of an artificial anus, and leave the cause of obstruction, with its resulting lesions, to a second operation, which may be undertaken if the patient rallies sufficiently to permit it.

In the cases of chronic intestinal obstruction we will always have the dual condition to contend with: that is, the disease, whatever its nature, which first occasioned the constriction of the intestine, and the obstruction of the intestine with its results. This will lead us to a wide domain of abdominal surgery, for the cause of the obstruction may be found in some organ physiologically remote from the intestine, as, for instance, the uterus or one of the Fallopian tubes. It may be a cicatricial stricture of the intestine, a new growth involving the intestine, a tumor arising from almost any organ within the abdomen, or an inflammatory condition of the peritoneum. Late years have so far improved operative technique of abdominal and intestinal surgery that our results are much better than formerly; but reliance should not be placed on this fact, for it is still true that resection of a portion of gangrenous intestine is more dangerous than the simple cutting of a constricting band before gangrene has been produced, and our every endeavor should be to recognize these cases early, and to treat them so promptly that we will be subjecting the patient to the simplest and safest operative procedure possible in his case.

Believing that this general survey of the subject will serve as a sufficiently comprehensive introduction, the author feels that the time will be much more profitably employed by turning from these remarks to the special and more complete discussion as outlined in the programme, and he takes great pleasure in giving way to his fellow-contributors who have so kindly volunteered in the performance of this work.

THE CAUSES OF ACUTE INTESTINAL OBSTRUCTION, WITH A DESCRIPTION OF THEIR MECHANISM.

By E. D. FERGUSON, M. D., of Rensselaer County.

October 19, 1898.

That the frequent necessity and the occasional impossibility of giving accurate limits to the significance of words render a certain latitude in verbiage not only pardonable but necessary, came at once into prominence in connection with the word "acute," when I read the subject assigned to me in this discussion, for it seemed probable that though considerable latitude must be allowed the term in most instances when applied to the duration of diseases, its application in the divisions for this discussion must refer mainly to the obstruction itself and not to the conditions or causes that led thereto, which may be chronic. From that fact I may at times intrude upon divisions of the subject which will receive attention from other speakers, in order to include the matter to which we each have a claim.

Further,—the word "obstruction," which usage has sanctioned in this connection, is hardly descriptive, for it conveys to the mind the lessening or closing of the lumen of the bowel by some external or internal mechanical means. This not being the whole truth, as in the exception where paresis or paralysis of a portion of the bowel exists, it has seemed to me that the Anglo-Saxon word "stoppage" was better than its Latin relative.

The first point to be considered on placing a complex subject before others is the order in which the various elements shall be arranged, and the item selected for first consideration is the stoppage of the bowels without apparent or

discoverable mechanical obstruction so far as the patency of the canal is concerned. The passage of the intestinal contents along the tube is fairly comparable to the ancient fire-line where the buckets were passed from hand to hand from the cistern to the fire. If a single man drops out in a closely formed line the buckets may be made to pass the gap by efficient work on the part of those next thereto, but should several contiguous men faint and fail the whole affair is brought to a halt unless the line is reformed. This dynamic failure on the part of a more or less extensive segment of the bowel has acquired prominence and importance in recent times, alike from the fact of its undoubted occurrence and the importance of recognizing it and thereby avoiding the needless performance of a serious operation. Three times it has fallen to my lot to be called upon to operate for intestinal obstruction when some fortunate event in my investigation has led to the recognition of lead paresis of the bowel instead of mechanical obstruction. My good fortune should not be considered as a reproach to the attending physicians, for in each instance they were competent men, and the stoppage of the bowels, with other symptoms, at first led me to agree with them. If an open and efficient confessional could be established, I presume many operators could be found who did not have my good fortune, but made the discovery of the dynamic character of the trouble after the belly had been opened.

It is not practicable to specify all the causes which are adequate to bring about the condition of paresis or paralysis, for undoubtedly some are yet unrecognized, but among them we may mention, toxic influences, peritonitis, embolism of a mesenteric artery, hysteria, and possibly reflex influence.

The fact that this condition of paresis favors the occurrence of other forms of stoppage will be considered when treating of the mechanism of the production of those forms, and need not detain us now.

To me one of the most interesting of the probable toxic forms of obstruction is that associated with the production of

intestinal ptomaines, and while I am unable to specify a single individual toxic agent of this category which induces the condition, I have repeatedly witnessed the progress of events in cases where the accepted evidence of ptomaine poisoning existed in connection with the classical signs of intestinal obstruction, and where autopsy failed to show any mechanical explanation of the stoppage, and where there was no evidence of peritonitis or mesenteric embolism. This phase of the subject I treated in a paper read before the Association in 1896 and printed in Vol. XII of the Transactions, hence I will not dwell on it more fully at present, except to call attention to the instance then related of an apparently hopeless case of intestinal poisoning with black vomit and feculent material therein. A recovery occurred after persistent irrigation of the bowel whereby the intestinal contents were apparently washed out through the mouth. The ability to accomplish that seemed to me to be favored by a paretic condition of the bowels, for here, to refer to a recent simile, we were not depending upon a file of men to pass the fire-buckets, but were fighting the conflagration with an engine and hose.

The large number of cases of this character which have followed the surgical opening of the abdomen renders the subject one of considerable importance. Though some have doubted, and even do doubt, the occurrence of obstruction from mere dynamic failure of a limited portion of the intestine, still the evidence is conclusive that obstruction may occur with no mechanical explanation of its cause to be found at the post-mortem examination. Several instances have fallen under my observation in which no change in the arrangement of the coils of intestines, no mechanical obstruction, and no peritonitis were found upon examination made after death.

The occurrence of obstruction from the remaining causes noted in this category is rare, and need detain us only to mention the possibility of its occurrence.

In arranging a division of the subject in connection with

mechanical obstruction of the bowels it is evident that three classes exist: first, obstruction from conditions without the bowel; second, obstruction from conditions within the bowel; and third, obstruction from conditions relating to the wall of the bowel. Besides these three classes some mixed types occur, due to the combination of two or more elements in individual cases. This is manifest in such a condition as intussusception when a polypus may have induced the trouble, while the real obstruction may be partly in the intussusceptum, and partly due to changes in the wall of the intussusciens.

Our first division of mechanical obstruction embraces all cases in which the lumen of the bowel is occluded by compression from without. In this category are to be found:

- a.* Compression by tumors or displaced viscera.
- b.* Compression by bands, cords, other loops of bowels, and by traction.
- c.* Compression in apertures.

In compression of the bowels by tumors or displaced viscera it is a curious fact that more cases are acute than chronic, both in onset and course. This is in a measure accounted for by the far greater frequency with which it occurs in fixed portions of the canal, as in the rectum, cæcum, and duodenum, probably over 75 per cent. of the cases occurring in these short portions. The rectum leads in frequency, and even when the small bowel is involved it usually occurs at a portion resting in the pelvic pouch of the peritoneum.

As to the frequency with which this form occurs in contrast with all other forms of obstruction, no satisfactory statistics have come under my observation, but in view of the frequency of abdominal growths, it seems remarkable that it does not occur more frequently than appears to be the case. The usual mechanism of its development is found in the presence of a more or less movable tumor or viscus, which by dislodgment or sudden movement presses against a portion of the bowel with a more or less rigid part opposing

the pressure. This is quite simple in detail when it occurs in the pelvis from cysts, fibroids, and gravid uterus in the early stages of pregnancy, or other growths, but it is not so clear in cases occurring in the cavity above the pelvis. It is probable that in many cases above the pelvis the occlusion is not so frequently due to compression as to traction, and that then the chronic or incomplete form more frequently occurs. A sudden jar, blow, or other cause of displacement of the tumor or viscus enters commonly into the clinical history and is manifestly important in the mechanism of its production. In a case treated by the writer over twenty years ago, the rectum was compressed by a retroverted uterus which had enlarged probably to a little more than three months of utero-gestation. There was a history of a fall, but whether the fall induced the retro-displacement or only wedged tightly a pre-existing retroverted womb was not known. The condition was relieved by manipulation in the knee-chest position before the symptoms became very urgent, though the progress of the case was that of one going rapidly from bad to worse. Though vesical trouble directed attention to the pelvic organs, the vomiting, pain, and rapidly developing depression led to the investigation for obstruction, its recognition and relief.

A consideration of our second sub-division, compression by bands, cords, other loops of bowels, and by traction, will demand more of our time and thought, both from the greater frequency of its occurrence and the more complex character of the mechanism. Though the anatomical division into bands and cords is somewhat arbitrary, still the larger, broader, or flatter structures may be conveniently classified as bands, while the more slender or rounder forms pass as cords. The majority of these bands or cords are the results of localized peritonitis, though normal structures may contribute largely or even entirely to the obstruction.

In the majority of instances when bands or cords are the cause of the occlusion of the bowel we are able to note that the onset and course pursue a relatively common course in

that the occlusion is rapidly made complete, with all that that fact implies. Then again the segment of bowel involved is usually a part of the small intestine, and quite generally the ileum. This is manifestly due to the fact that the lower segment of the peritoneal cavity is more subject to inflammatory processes, together with the fact that the upright position naturally favors the entrance of loops of the ileum into traps thus formed. This does not preclude, however, the occurrence of the trouble in other portions of the abdomen, and as a matter of fact obstruction has occurred by bands or cords which have formed in every portion of the peritoneal cavity. One of the more frequent forms has each end attached to the mesentery, and has been rationally accounted for by local peritonitis due to diseased mesenteric glands with adhesion and final "drawing out" of these adhesions.

Curiously enough the omentum, which from its position would seem to offer a ready basis for marginal or other adhesions adapted to produce obstruction, is a comparatively rare factor in the etiology of these cases though it figures as a culprit occasionally. On the other hand, we find bands from bowel to bowel, from bowel to mesentery, from womb, ovary, and tube to bowel or pelvic wall, bands from pelvic wall to pelvic wall,—in fact, in almost every conceivable position and relation. Another curious fact is the rarity with which more than one band or cord exists, though the possibility of two or more is to be kept in mind. This singleness of the band does not indicate a previous peritonitis limited to the points of attachment, for there commonly exists other evidence of broader inflammation, as in the welding together of the parts by more or less broad surfaces. The length and position of the band determine in a measure the character of the obstruction. When it is short it is common for a single loop of bowel to enter and become caught, but if long then complex involvement may arise which varies greatly in different cases, and will occasionally amount to a veritable puzzle in the disentanglement of the different loops which have been involved.

The mechanism of the obstruction is usually very simple,—the entrance of a loop of bowel under the band during some forcible displacement of viscera, or the gradual passage of the bowel into the trap, and the passage of bowel contents through the descending entrance to meet with more obstruction to exit at the distal opening, whereby, with vascular changes, the loop is distended and the pathological condition grows rapidly worse.

A variety of cords exist which differ from the ordinary bands, in greater length particularly, as well as in a certain mobility, whereby special results are induced. These cords are frequently the result of some failure to complete a process of involution in passing from intra-uterine to extra-uterine life, particularly in the case of Meckel's diverticulum, though they may result from adhesions of some projecting and movable part, as the Fallopian tube or the tip of the appendix, or even by a long and lax cord resulting from the adhesion of remote parts which were brought in contact during an attack of peritonitis and finally became restored to their normal positions but remained connected by a long and usually slender cord. These cords may become detached at one extremity and stimulate a whip-lash with the same possibility of knotting, and the fact that genuine knots may be found, which in severe cases would puzzle either a modern or an ancient mariner, furnishes a basis for grouping with those free cords such processes as Meckel's diverticulum, for the further analogy exists that the diverticulum may fail to be liberated from the tissues at the umbilicus and so remain a cord, or having been liberated it may contract adhesions and so become a cord. There is no doubt but that a clubbed extremity to these free cords or diverticula favors the formation of a loop exactly as in the case with a whip-cord with a knot at its end. No skiagraphic view is possible in which we can see the steps of the process whereby a segment of a bowel becomes the subject of strangulation by these lax or free cords, but it seems probable that quite commonly the first step is the formation of a loop or noose into which the bowel

slips, but it is rational to conclude that in the case of the free cord or diverticulum with a clubbed extremity the method may follow the lines whereby a whip-lash is caused to encircle an object. In that case the loop of bowel to which the diverticulum is attached will be apt to be involved. If the diverticulum be quite long, then the number of loops of bowel involved may be two or three and the complexity of the tying process may be considerable. The exact possibilities in the way of particular knots do not seem to be a profitable subject for discussion, for the special line of obstruction is to be sought in each case. One point, however, seems important, and that is in obstruction due to lax cords it is common for a loop to be formed first into which the bowel enters, while in the case of diverticula or free cords a wrapping and subsequent knotting occur. The practical point to consider is whether we are dealing with a diverticulum or a cord, for if it be the latter we can begin the liberation at any accessible point of the band, while in the case of a hollow band the anatomical relations must be studied until the "snarl" can be unravelled, or a place found where separation or incision can be safely undertaken.

A rare and yet possible form of obstruction must not be forgotten in which a loop of intestine falls over a band, and either by a parietic condition, weight of contents, or retention by pressure, occlusion results.

A rare cause of acute obstruction is found in traction, whereby thorough adhesion either of the bowel to another loop of bowel, or the bowel itself to some movable organ as a kidney with a mesonephron or a gravid womb, a sudden and acutely angular bending of the bowel occurs. That this form is not more frequent, seems due to the fact that in many cases the position is liable to change, and the trouble passes by, for the time at least. The fact that traction is liable to be associated with some torsion, renders the mechanical process somewhat mixed, but when simple its nature is so apparent that the details of the way in which stoppage occurs, need not occupy our time.

In taking up a consideration of the third sub-division of the question, that of compression in apertures,—we find the largest number of cases of actual obstruction of the bowels, for in this class are included the hernias. The essential features of a hernia, so far as the surgical and etiological elements are concerned, is the projection of intestine through an orifice in such a way that the movement of the contents of the bowel through the projecting portions is retarded or arrested.

The fact that the bowel is covered by certain anatomical layers as in inguinal or femoral hernia is only an incident, for from a symptomatic and mechanical standpoint, the same conditions may obtain in protrusion of bowel through an opening in the mesentery as through the inguinal ring. The expression, “compression in orifices,” does not probably give the whole idea of the cause of obstruction in these cases, for other factors may exist, as torsion, and in particular kinking or angular bending of a portion of the bowel on the proximal side of the opening. This was clearly demonstrated in a large hernia upon which I operated this year. The patient was an elderly man, and the external portions consisted of long loops of ileum, together with the ascending colon caecum and appendix. On opening the hernial sac, though the hernial opening could readily admit a finger, or even two fingers by the side of the bowel, and there were no adhesions, I was unable to return any of the fluid or gaseous contents of the loops of bowel back into the intestines in the abdomen by manipulation and compression, so I finally had to open one of the loops and empty it of its contents, when it was readily returned. This obstacle to reduction was strongly brought out by the fact, that after emptying one loop I could make no better progress in returning the other loop until I had opened and emptied it.

The compression, however, usually results in strangulation and I imagine that the mechanical details are somewhat in the following way, and are connected with two distinct but coöperative influences: first, when a loop of bowel passes

into and through an opening, if the event has occurred under some violent or other favoring conditions, more or less compression will be brought to bear upon that portion of the gut in direct contact with the opening. If the compression by the surrounding parts upon the bowel beyond the opening is not so great as at the ring, and the compression at the ring is less than the peristaltic force of the bowel, some of the contents thereof will pass through the ring into the imprisoned loop, and should circumstances determine that the return point or escape outlet is less compressed, the material may pass on its course toward the anus. If, however, the compression at the outlet is equal to or greater than at the inlet, then the tendency is to increase the contents of the escaped loop until its distension causes the resistance to equal the force of peristalsis. In the meantime the peristalsis of the now incarcerated loop grows less and disappears by reason of the second cause of obstruction, *i. e.*, changes connected with the nutrition of the bowel.

It is manifest that compression will interfere with the vascular supply, the disturbance being greater or less, more rapid or slower, according to the compression.

The first effect of pressure upon the vessels will be to produce venous hyperæmia, the veins feeling the compression more than the arteries. This hyperæmia results in serous exudation into the coats of the bowel and probably adds to the liquid contents of the imprisoned loop, while the stasis in the blood current and bowel contents favors chemical change with evolution of gas, still further distending the imprisoned gut and adding to the compression at the external margins of the ring. Unless relief is afforded at this time events move rapidly. The hyperæmia becomes intense, the compression attains its possible maximum, vitality is diminished, pathogenic germs find a soil for their activities in the coats of the bowel, and ulceration or gangrene appears on the field. Varying circumstances will modify the events; in some instances the nutritive disturbance being of a kind or grade to favor adhesions between the ring and gut, or of the

contiguous walls of the bowel, thus adding elements favoring obstruction.

The second general division of our subject relates to obstruction from conditions within the bowel, and here we find cases of mechanical stoppage by foreign bodies, by tumors, and by intussusception, though by foreign bodies and tumors the obstruction is more frequently chronic than acute.

In view of the variety and quality of indigestible material that enters the alimentary canal, it is remarkable that obstruction does not occur more frequently from foreign bodies, and still more remarkable that gall-stones should be one of the chief offenders. The puzzle as to how the camel could go through the eye of the needle, *i. e.*, how these enormous gall-stones could reach the bowel, has been solved by the assumption on fair evidence that an ulcerative process opens the way from the gall-bladder to the bowel, though doubtless very large stones occasionally find a passage through the ducts.

Enteroliths, composed mainly of the earthy phosphates, occasionally form in the bowels and curious aggregations of vegetable or animal substances, occasionally mixed with the phosphates, occur. The bezoar in animals, consisting of felted masses of hair, finds its analogue particularly among my ancestral people in the "avenoliths" or oat-stones made up of the hulls of oats. The fibres and seeds of some fruits occasionally become blended with or without the aid of some mineral cement into firm masses, while certain drugs, as some of the bismuth salts and carbonate of magnesia, contribute an occasional enterolith. Recently a new foreign body has appeared, the Murphy button, though its risk in this connection seems more than counter-balanced by certain surgical advantages.

The occurrence of acute obstruction from these various objects is usually accounted for by their being domiciled for some time, as during formation, in some part of the gut where their mass fails to close the lumen, but becoming dislodged they encounter a narrow place as the ileo-cæcal por-

tion, or a stricture from previous disease, and thus "cork up" the passage.

Acute obstruction as a direct result from tumor within the bowel is exceedingly rare; though most neoplasms so situated have a tendency to become polypoid in form, and hence by exerting a dragging force on a portion of intestinal wall they occasionally determine the development of intussusception. a numerically important contributor to the list of cases of acute stoppage of the bowels, particularly among infants and children, though with them not due, as a rule, to tumor.

The telescoping of the bowels offers some very interesting problems in connection with the method or mechanism of its initiation and development. Though the obstruction is due largely to the swelling and compression of the contained segment of bowel, it has seemed to me proper to classify intussusception among those where the trouble is within the bowel, for we have bowel which in itself is not narrowed, surrounding and containing the obstructed part.

It seems hardly necessary to give an anatomical description of the relation of the parts in an intussusception, for we all recall that in a simple case a portion of bowel is invaginated or prolapsed into a contiguous portion, giving as a result an outer portion known as the sheath or intussusciens, and an inner portion, the intussusceptum, which consists of two layers, the entering, or inner, and the returning, or middle, layer. The intussusceptum also is notable in that these two layers present opposing peritoneal surfaces, and thereby offer conditions favoring adhesion and consequent fixation of the displacement. The fact that this whole mass of a simple intussusception can be invaginated and give five instead of three coats, or even seven, if the process is repeated so that the upper edge of the intussusciens is rolled over as a cuff, adds no new principles to the problem. These double and triple intussusceptions are comparatively rare, and, though the double form is said to be relatively common, the author has never met an example.

The steps whereby the condition develops are not identical

in all cases, and much ingenuity has been manifested in explaining the process of occurrence. One of the most ingenious and instructive investigations was that conducted by Nothnagle about fifteen years ago, in which he demonstrated that the direct application of the faradic current to the bowel of a rabbit induced great contraction of the tube, which extended for some distance above the point of electrical contact and continued during the period the current was applied. In this way a narrow tube was created as a connecting link between two wider portions. By continuing the process for some time the actual steps of an intussusception were observed. When the upper extremity of the contracted portion ends abruptly, the larger tube slipped over it, and so began the formation of that rare form of the trouble, a retrograde intussusception in which the intussusciens is from above and the intussusceptum from below.

At the lower extremity of the contracted portion a different process occurred. I quote from Treve's account of the experiment. "The spot at which the electrodes are applied forms practically a fixed point. The normal gut immediately below the contracted part turns itself upward to a slight extent over this strongly contracted and greatly narrowed portion. A minute invagination is thus produced which increases at the expense of the intussusciens." In the absence of opportunity for diagrammatic representation of the further events said to have been observed, I can only say that the point of contact of the electrodes marked the upper extremity of the sheath, the sheath infolding itself so as to add to the length of the contracted portion by this infolding and consequent compression of the contained part by the sheath. When the current was stopped, the contracted portion expanded, the infolded portion gradually unfolded, and the parts returned to a normal condition. Though the direct action of the faradic current is not a factor in clinical intussusception, the fact that a muscular action results from other and intrinsic causes renders this observation of great importance. Concentric contraction of a portion of the

alimentary canal for a considerable extent occurs, and may continue for a long time. Over twenty years ago I made a post-mortem examination of a man in whom I had diagnosed obstruction of the descending colon without actual occlusion. Nearly the whole extent of the descending colon was reduced to the calibre of a lead-pencil, and without evidence of inflammatory or other gross morbid process. I offer no explanation aside from a spastic contraction of the circular muscle of the bowel, and leave to our neurologists to explain the ways in which it can occur. Had this condition existed in a more freely movable portion of the canal an intussusception would doubtless have occurred in the manner described by Nothnagle. I will add that the extremities of the contracted portion were sharply defined from the normal gut and marked by no disease process except the distension of the gut at the upper end and some vascular changes from that distension and the irritating contents of the distended bowel. The man died from inanition due to his inability to retain and appropriate food.

So much for the spasmodic form of intussusception. The paralytic form was investigated by Nothnagle as follows:—"A segment of bowel from three to six inches in length was entirely paralyzed by crushing. When stimulation was applied above the paralyzed part nothing followed save the usual ascending contraction. When, however, the electrodes were applied to the gut immediately below the inert segment, a typical descending intussusception developed. This invagination grew solely at the expense of the normal bowel. The paralyzed part was not concerned in it, the electrodes remaining quite unmoved at the original place of application just as occurred in the previous experiment."

This shows us that the innervation of the bowel is an important element in the telescoping process, and leads to the conclusion that the factors are usually somewhat complex and probably implies in most cases that in contiguous areas are found paralytic and irritative conditions. It, in most cases, at least, removes the idea that the intussusceptum

is driven into the sheath, and supports the statement of Treve's that it is a process "of one piece of gut being drawn over another."

Still the occurrence of intussusception with special mechanical conditions present which would seem to indicate another origin, justifies the conclusion that Nothnagle's experiments do not tell the whole story. The occurrence of polypoid masses or foreign bodies at the extremity of the intussusceptum is reasonable proof of the simple process connected with traction whereby an infolding is begun, to be continued possibly by the more complex forces just indicated. The presence of ulcers or strictures at the extremity of the intussusceptum is not proof of their causative influence; they may be the result of the invagination, for there is ample ground to conclude that intussusception is often slow in its development to the point of serious obstruction and the production of acute symptoms, hence opportunity exists for nutritional changes connected with the mechanical disturbances of circulation. Though we have referred mainly to the action of the circular fibres of muscle in the mechanism of the invagination, it is probable that the longitudinal bands are factors in the process in tugging at the longitudinal axis and bringing fresh areas under the influence of the disturbed activities. Another force seems important, at least in accounting for the great extent of some of the contained parts, *i. e.*, peristalsis on the part of the sheath, direct peristalsis in the ordinary form, and reversed peristalsis, if we may accept its existence, in the retrograde form. It is manifest that all circumstances tend to diminish peristalsis in the intussusceptum which becomes more and more like unto a foreign body in the part of the bowel known as the intussusciens, hence, however the trouble may originate, having once reached the stage where there is considerable sheath, peristalsis may intervene and favor the increase of the invagination by driving forward the intussusceptum. Disordered digestion with consequent morbid chemical compounds acting as toxic agents, disturbed

mobility in the coats of the bowels, traumatism with paralytic influences,—in fact, a great variety of conditions and influences may conspire to favor and induce intussusception, and it is highly probable that slight grades of the trouble are of very frequent occurrence. When an invagination occurs at some point where special conditions exist opposing the release of the entering portion, the probability increases that here will occur the larger proportion of serious cases. Such is believed to be the case at the ileo-cæcal orifice, which has been likened to the anus in some of its features, whereby when a portion of the ileum enters the orifice it is liable to be caught and held as in a prolapse of the mucous coat of the rectum, or the descent of piles. Adhesions between the opposed peritoneal surfaces, œdema, ulceration, and gangrene of the contained part, need not detain us in this connection, though the adhesion of the peritoneal surfaces at the apex of the sheath and the separation of the intussusceptum just below that point by gangrene, thus bringing about a cure, is one of the most striking illustrations of favorable results under unfavorable conditions afforded in medicine. This is particularly remarkable in view of the high per cent. of immediately favorable results, reaching to nearly 50 per cent. in adults according to some authorities, though correspondingly unfavorable in infants. This does not imply that all cases in which the intussusceptum is cast off will recover, for accidents occur thereafter, as leakage at the line of separation whereby a fatal issue results.

Any movable portion of the tube may enter into the formation of intussusception, but over 50 per cent. of the cases are found to consist of the entering of the ileum into the colon. The extent to which the invagination may go is remarkable, a very long portion of gut being occasionally involved.

We will now take up our last division of the subject, *i. e.*, obstructions due to physical conditions relating to the walls of the intestine.

In this division we include stricture, however produced by intra-mural conditions, and last but not least, volvulus.

The limitation of my part of the discussion to the consideration of the causes of acute obstructions removes the larger majority of strictures, whether caused by cicatricial or dynamic contraction or mural growths, from my bailiwick, for these cases are usually chronic in their course, and only become acute when associated with other conditions, as foreign bodies, etc., all of which is considered elsewhere in the paper. Still it must not be lost to sight that the graver symptoms of obstruction often occur quite suddenly in these cases, though the history should lead us to at least the suspicion of the condition which has led up to the stoppage.

That rolling or twisting of a segment of bowel known as *volvulus* is by curability by surgical interference a very important item in obstruction of the bowel. This torsion may occur in two ways: first, either around an axis which extends through the transverse diameter of the bowel to the mesenteric attachment at the vertebræ; or, second, more or less directly along the line of junction of the bowel and the mesentery. In other words, there is a transverse twist and a longitudinal twist, the former being the more frequent. To these forms may be added in this category those cases in which two coils of intestine are twisted about each other so as to occlude one or both coils. Of those forms, that which occurs around the mesenteric axis constitutes over 75 per cent. of all cases of *volvulus*. Two factors may be said to favor its occurrence: first, a long mesentery with a somewhat narrow neck at the vertebral attachment, *i.e.*, mesentery spread outward to connect with the bowel somewhat in a fan shape; and, second, contents of bowel which would tend to displacement laterally by sudden movements or pressure from contiguous parts. These conditions are most fully developed in many persons at the sigmoid flexure, for the meso-colon is at that point often long enough to allow the sigmoid to extend across the abdomen to the cæcum, or up to the umbilicus, while the two legs of the loop are fairly closely approximated at the pelvic brim. Chronic constipation by forcing this portion of the bowel into undue service as a storehouse for fæcal

material, favors the occurrence of volvulus by lessening the tone of the coats, and by the presence of masses which by gravity, pressure, or impulse may carry the bowel into a state of torsion. Two forms of simple twist at the sigmoid are recognized: one, in which the upper part of the loop is curved downward and forward so as to bring the colon in front of the upper part of the rectum; and another, in which the motion is reversed, the loop passing downward and backward, bringing the colon behind the rectum. The degree of twisting may vary from a few degrees to two or three complete turns. When the twist has attained a degree that occludes the lumen of the gut and interferes with the vascular supply, there is very slight prospect of spontaneous restoration, for with disturbed nutrition the walls become paretic and the evolution of gas distends and fixes the morbid position, which result is often favored by rapidly developed adhesions. The distension of the sigmoid loop with gas when occluded by volvulus is at times remarkable, instances being noted in which large distension of the abdomen was due to the distension of this single part. One curious feature is the great rarity — we might almost say uniform absence — of ulceration of the mucous coat, an exceedingly important fact to be considered when deciding on operative measures. Severe and long-continued twists do, however, lead to gangrene involving the entire thickness of the coats. One event is important: the frequent and often early development of peritonitis, which seems to have a special tendency to become diffuse, a result we may now ascribe to the great disturbance of the loop with flatus, thus extending its area of contact, and the condition of wall favoring the escape of micro-organisms contained within the bowel.

The locality in which each of the several forms of obstruction is most liable to occur is manifestly of importance in expediting our search where operative procedures are undertaken.

In strangulation by bands, orifices, or other process, the small intestine nearly always suffers, and the lower portion

of the ileum is specially liable to be involved. This is accounted for by the greater mobility of the small bowel, and the frequency of bands in or near the pelvis.

Obstruction by compression from tumors is found to exist rarely except in the pelvic region, and over 50 per cent. of the cases involve the rectum, with the sigmoid and lower ileum next in frequency. The duodenum is involved in quite a proportion (7 per cent.) of the cases. The bony wall of the pelvis, the fixed position of the duodenum, the frequency of tumors in the pelvic region and in the vicinity of the duodenum, furnish an explanation.

In the case of foreign bodies, including gall-stones, much will depend on the form of the body, but as a rule the lower portion of the ileum is the seat of the obstruction (in over 50 per cent. of the cases), the greater portion of the remainder being distributed throughout the small intestine.

Nearly 50 per cent. of the cases of intussusception will be found at the ileo-cæcal region, about 30 per cent. will be distributed throughout the ileum and jejunum, and the rest in the colon and rectum.

Stricture is dependent on many causes, hence its location will vary with varying tendency to location of the cause. In cancer we have the well-known frequency of its occurrence in the rectum, upper duodenum, and the ileo-cæcal region. Other cases of stricture will follow in location the causative factor, as in dysentery, typhoid ulceration, etc.

In volvulus the sigmoid flexure furnishes the majority of the cases, the remainder being distributed along the small intestines and at the cæcum.

As to the relative frequency with which the various forms of acute obstruction occur, I can find no better authority than Lichtenstein, who wrote over twenty years ago, and I extract from the data gathered by him the following figures, taken from the article in Vol. VII. of Ziemssen's *Cyclopædia*:

Strangulation by false ligaments	111
“ “ the omentum	58
“ “ diverticles	66

Strangulation by the appendix	34
“ in orifices	60
	<hr/>
	329
Diaphragmatic hernias	215
Angular bending	14
Compression by tumors, etc.	70
Obstruction by foreign bodies	108
Intussusception	442
Volvulus	64
Strictures	106
	<hr/>
Total	1,348

The table does not allow a separation into acute and chronic forms, but in the majority of cases it is fair to assume that the course was acute.

Some of the figures seem different from what would be expected in ordinary clinical experience. This is notably the case in obstruction from diaphragmatic hernia, which furnishes nearly 16 per cent. of the total number of cases.

Again, volvulus shows less than 5 per cent., a finding hardly to have been expected. Intussusception with nearly 33 per cent. seems more nearly to accord with general observation. Should we be unable to conclude in a given case which of the several forms of obstruction existed, under the doctrine of chances, before opening the abdomen, we would base our expectation on the following order of occurrence:

1. Intussusception.
2. Strangulation by bands, orifices, etc.
3. Diaphragmatic hernia.
4. Obstruction by foreign bodies.
5. Stricture.
6. Compression by tumors.
7. Volvulus.
8. Angular bending.

THE CAUSES OF CHRONIC INTESTINAL OBSTRUCTION, WITH A DESCRIPTION OF THEIR MECHANISM.

By GEORGE D. STEWART, M. D., of New York County.

October 18, 1898.

MR. PRESIDENT AND GENTLEMEN: — The causes of chronic intestinal obstruction and their mechanism so closely resemble those of acute obstruction that Treves, in his book on this subject, makes no special division, merely mentioning the conditions under which a certain cause may operate to produce either an acute or a chronic result.

After listening to the paper just read, I will not attempt anything further than to point out which of these causes most frequently produces chronic obstruction; and in doing so, I have nothing new or original to say, my single excuse for presenting this compilation being that it forms one link in the discussion.

Most writers on this subject agree that chronic obstruction is a partial obstruction, occurring usually in patients having a previous history of intestinal disease, and which progresses more or less slowly to complete or acute occlusion. By far its most common cause is stricture, either simple, that is, benign, or malignant; and because this is a common cause, let us examine it.

Simple stricture, it should be remembered, usually follows the healing, partial or complete, of an ulcer. And, therefore, the size, shape, and location of the ulcer are very important factors in determining the character of the subsequent stenosis. A small round ulcer is probably never followed by stricture. A long and narrow ulcer, with its greatest diam-

eter parallel with the long axis of the bowel, seldom invites stenosis. If the long diameter encircles the bowel, stricture is apt to result.

Dysenteric ulcers are frequent causes of simple stricture. They are often large, exceedingly irregular in outline, and invade great areas of the intestinal wall. The cicatrix resulting from this healing is so hard and dense and associated with so much contraction, that Treves states it as probable that they are often mistaken for scirrhus.

Catarrhal ulcers, resulting from a catarrhal inflammation of the mucous membrane and commonly limited to the colon, and *stercoral ulcers*, found only in the large intestine, are often the starting-points of simple stenosis. The latter form of ulcer is due to the mechanical and chemical irritation of faecal accumulations which may occur, particularly in the aged, without any disease of the bowel.

Syphilitic ulcers and, according to Lichtenstein and Leube, the peptic ulcer found chiefly in the duodenum, account for a few simple strictures. The *typhoidal ulcer*, it is believed by some authors, may be followed by stenosis; others, among them Treves, doubt the existence of a single well-authenticated case. *Tubercular ulcers* are most frequently found in the ileum. If they spread in a longitudinal direction, they are not likely to cause any narrowing of the lumen. Sometimes they encircle the bowel, causing an annular stricture which, however, seldom becomes very tight.

Simple strictures may also follow an ulcer due to the impaction of a foreign body in the intestine, or an injury of the abdomen with bruising and subsequent localized inflammatory process in the bowel wall; and, finally, stricture may be congenital. The latter form (congenital) is exceedingly rare and usually complete, but it may be partial, and is generally located at the junction of the different intestinal loops found in foetal life.

That these strictures prove chronic rather than acute forms of obstruction, is due to the slow contraction which

takes place in the cicatricial tissue and to the consequent slow encroachment on the calibre of the intestine.

Malignant strictures may be carcinomatous or sarcomatous, and each of these may be primary or secondary.

Primary carcinoma causes the vast majority of all malignant strictures, and is usually of the cylindrical epithelial variety. It is rare in the small intestine, and most frequent at the sigmoid and ileo-cæcal valve. It may occur in the form of nodules or flattened plaques, but has a tendency to encircle the gut, forming an annular constriction.

In such growths there will be found on the inner wall of the bowel an irregular ulcer surrounding the intestinal lumen. The base and sides of the ulcer are hardened and infiltrated with new deposit; the peritoneum outside is much thickened; the remaining layers of the intestinal wall have disappeared, while the intestinal lumen is markedly narrowed.

Secondary carcinoma will, of course, resemble microscopically the primary growth. The mechanism by which it produces stricture is much the same as that described under primary carcinoma.

Sarcomatous strictures are uncommon, but sometimes occur in the small intestine. They are usually primary, starting in the mucous layer. These growths are frequently annular in the early stages, and may at that time permit complete excision; it must not be forgotten, however, that metastases occur early.

Paresis of the intestinal wall with fæcal accumulation is a frequent cause of chronic obstruction. It is rare in the small, but not uncommon in the large, intestine, particularly in the cæcum, transverse colon, and sigmoid. This paresis usually occurs during the course of an apoplexy or some central nerve-lesion, or in hysteria. It may also be caused by lack of exercise, chronic catarrhal conditions of the bowels, or even by hereditary influence. In each of these conditions there is a tendency to impairment of the intestinal peristalsis, and at some point the fæces accumulate and become impacted. The bowel distends at the point of impaction;

below, it is relatively contracted. When the fæcal accumulation becomes greater, gases collect, the already distended bowel is stretched until the muscular fibres no longer possess the power of contracting, and paralysis with complete obstruction results. It is this class of cases that present a history of previous chronic constipation. *Paralysis* of the bowel following a peritonitis due to the compression of strangulated hernia, severe contusions of the bowel, or to any cause whatever, is a familiar condition and usually causes an acute obstruction. When, however, the peritonitis is limited to a short segment of the bowel, the fæces may be carried through the paralyzed loop by the intestine above, and a partial obstruction of longer or shorter duration is the result. When a localized peritonitis ends in cure, the adhesions left may so limit the peristalsis of a short segment of the bowel as to produce a markedly chronic case, which may be further aggravated and complicated by fæcal accumulation.

According to Erichsen, *intussusception* runs a chronic course in about 18 per cent. of all cases. Permanent narrowing of the bowel is brought about by intussusception in one of the following ways: first, the intussusception does not become strangulated, undergoes but little, if any, structural change, and remains to permanently narrow the canal; second, the intussusception becomes more or less strangulated, and undergoes certain structural changes varying in degree from slight ulceration to almost complete sloughing, and the canal is occluded as under the first; third, the intussusception sloughs without producing any but a localized peritonitis, and at the neck of the invagination a circular cicatrix is formed which later produces a chronic stenosis.

Adhesions, the result of a recovered peritonitis due to any cause whatever, are often the source of chronic intestinal obstruction. These adhesions may occur between almost any two points in the abdominal cavity, and they produce usually in one of the following ways: first, by bands. These usually cause an acute obstruction, particularly when the band is short, crosses the course of the bowel, and is stretched

over a firm surface, *e.g.*, posterior abdominal wall. When the band is long, and stretched between movable points, it is conceivable that a chronic obstruction may be produced, although owing to the intestinal movements this is not likely. Second, by compression. This occurs where adhesions bind the intestine to some fixed structure, and is frequently found in splenic and hepatic flexures of the colon. Since the compression is due to the contracting adhesion, it is obvious that the process will be more or less chronic.

A cicatrix of the intestine may cause a narrowing by puckering the bowel wall. Kinking of the bowel, and its strangulation through slits, will usually cause acute obstruction. Adhesions which bind a segment of the bowel into a rigid loop may lessen peristalsis and cause chronic obstruction.

Mesenteric gland disease, and that variety of peritonitis due to the venous engorgement of heart disease and cirrhotic liver, often cause a shortening of the mesentery which binds the intestine to the posterior abdominal wall, thereby producing an obstruction which must be chronic. Tubercular peritonitis causes matting of the intestine, and limits peristalsis to a marked degree, often causing a marked form of chronic obstruction. Diverticula, such as Meckel's, the vermiform appendix, and the Fallopian tubes often cause obstruction, either by making a loop around the bowel or by forming an abnormal adhesion and acting as peritoneal bands. Obstruction in these cases, however, is nearly always acute.

Benign growths of the intestinal wall, occupying the lumen of the gut, are rare. They are adenomata, fibromata, myomata, lipomata, and cysts. Hæmatoceles also form in the bowel wall beneath the mucous membrane. In the canal many of these tumors assume a polypoid form. Of themselves they rarely grow large enough to obstruct the intestine, but are more apt to produce obstruction by dragging on the bowel segment to which they are attached, and carrying it into the segment below, thus producing an intussusception. Volvulus is always acute in the sigmoid; in the cæcum and ileum, however, a chronic case sometimes occurs.

Tumors outside of the intestine, either benign or malignant, may cause chronic obstruction by compression. Such tumors rarely obstruct the small intestine, but are liable to compress the more fixed portions of the large, and those coils of the small which hang into the pelvis. The usual site of these tumors is in the pelvis, where for obvious reasons they are more liable to cause compression. Eight out of twenty-two such cases were chronic.

Among the conditions causing chronic obstruction by compression may be mentioned retroverted uterus, uterine tumors, vesicle calculi, abscess connected with bone, extra-uterine foetation, tumors of kidney, pancreas, plugging kidney, hydatid cysts, cysts of the mesentery, etc.

Foreign bodies in the canal — as gall-stones, enteroliths, and polypi — frequently cause acute obstruction, but may result in chronic, either by becoming impacted and producing an ulcer, or by partially blocking the lumen of the intestinal canal.

NOTES ON INTESTINAL OBSTRUCTION FROM IMPACTION OF FÆCES, ENTEROLITHS, AND FOREIGN BODIES.

By J. W. S. GOULEY, M. D., of New York County.

October 19, 1898.

The following notes, made from time to time, are now put together, with a few additions, to comply with the urgent request of our enthusiastic Fellow appointed to open the discussion:

One of the objects of these notes is to call attention to the late Doctor Eve's admirable collection of rare, interesting cases, embracing every department of surgery and gathered from many sources which may not be accessible to some of the younger writers.

Different parts of the alimentary canal are obstructed (*A*) by fæcal matter, (*B*) by enteroliths, and (*C*) by foreign bodies.

(*A*) *Obstipation, from accumulation of stercoraceous matter*, occurs in the large intestine—sometimes in the head of the colon, generally in or near the sigmoid flexure, and often in the rectum. It occurs more commonly among females than males, elderly persons than young subjects. The obstruction is seldom complete. It is preceded by long-standing costiveness. The alvine discharges are small, often light-colored, but ordinarily dark, of mortar-like consistency, and of foul odor. The patient almost invariably says that his bowels are regular, because he has one or two stools daily. Thus deceived by this apparent regularity, he allows the fæcal matter to accumulate gradually until it forms a tumor, in one or both *iliac* regions, which is too often mistaken for

malignant disease. Weeks or even months may elapse before the obstruction becomes complete, as exemplified in the case reported. some years ago, by our distinguished Fellow, Doctor Thomas D. Strong, the patient dying eight months and sixteen days after his last stool.

Beside the grave local effects of long-retained stercoraceous matter, it is well to take into serious consideration the constitutional injury caused by absorption of the ptomaines consequent upon putrefaction of these pent-up fæces, and the heavy tax upon the kidneys entailed by the impaired uses of the intestinal mucous membrane. How often chronic diffuse nephritis is the result of obstinate costiveness! Enough has already been said by others of the diagnosis of fæcal impaction and its ill effects upon other organs than the intestines, but too much cannot be reiterated concerning its preventive or its early treatment, particularly about the excellent effects of gradual, slow irrigation with a great abundance of warm saline water, with the view of softening and detaching the thick fæcal matter which is, as it were, glued to the intestinal mucous membrane. When the rectum is filled with fæces, it should be emptied or relieved, by means of a scoop, before the irrigation is begun. It is generally necessary to administer two or three of these large enemata at intervals of two days, and also to make use of several small doses daily of laxative medicine by mouth, rather than one or two large doses of powerful cathartics.

(B) *Enteroliths* are of at least five kinds,—(1) Those with gall-stones as nuclei; (2) those composed of fæcal matter and lime and magnesia phosphates and carbonates; (3) those composed of vegetable substances, fæcal matter, and calcareous particles; (4) those composed largely of swallowed medicinal agents, such as magnesia carbonate or bismuth; and (5) those with foreign bodies as nuclei. They are all liable to cause obstruction. The first, in the duodenum, jejunum, or ileum; the second, in the ileum or colon; the third, in the colon or rectum; the fourth, in the stomach, jejunum, or ileum; and the fifth, in the small or

large intestine. It is scarcely necessary to say that when enteroliths cause intestinal obstruction they are to be removed by abdominal section; the enterotomy to be immediately followed by enterorrhaphy.

(C) *Foreign bodies* enter the alimentary canal (a) by the mouth, (b) by the anus, and (c) by penetrating wounds of the abdominal walls.

(a) The following list indicates a few of the substances recorded as swallowed by individuals of either sex: to wit, coins, artificial teeth and their plates, peach pits, pins, needles, knives, forks, spoons, hair, strings, sticks, nails, hinges, straw, cotton fabrics, a silk handkerchief, percussion caps, bullets, a tenter hook, an egg-cup, bone, cork, leeches, wheat, raw rice, whalebone, cloth, buttons, pieces of glass, a leaden bar, a glass phial, etc., etc.

Professor Eve¹ has collected, from different sources, fifty instances of foreign body swallowing, of which thirty-five patients recovered and fifteen died. Of these fifty cases, twenty-six were adult males, sixteen adult females, two male infants, one female infant, and five infants whose sex is not given. Some of the swallowed substances were expelled without causing obstruction, while others after obstructing certain parts of the alimentary canal were expelled spontaneously, extracted artificially, or remained fixed in the body to cause death.

Swallowed foreign bodies may be impacted in the pharynx, œsophagus, pylorus, or intestines, or may enter the stomach, pass through the intestines and be expelled at stool.

FOREIGN BODIES IN THE PHARYNX.

The swallowing of coins, though of common occurrence, particularly among young subjects, seldom causes any serious inconvenience, but occasionally coins become impacted and close some part of the alimentary tube, besides being otherwise mischievous. Professor Eve¹ makes mention of three

¹ "A Collection of Remarkable Cases in Surgery," by Paul F. Eve, M. D., etc., Philadelphia, 1857.

unusual cases of coin swallowing. The first was the case of a man "who took the expensive repast of a hundred Louis-d'or at a single meal;" the second, who swallowed seven half crowns for safe keeping; and the third who had attempted to ingest nine pistoles wrapped in a piece of cloth. The package lodged in the lower part of the pharynx, and, pressing upon the trachea, so impeded respiration as to render tracheotomy necessary; the plug was then pushed into the stomach as it could not be extracted from above. The coins were afterward discharged at stool.

Benjamin Bell relates two cases in which death from suffocation was due to the lodgment of foreign bodies in the pharynx; and Desault mentions one instance in which a woman swallowed a bone that lodged in the pharynx and occasioned suffocation. She died in five minutes. A woman died from suffocation caused by the lodgment in the pharynx of a cork obturator which she had worn to close a cleft in her palate and which she had accidentally swallowed. The attempt to swallow large chunks of meat or other bulky objects, such as hard boiled eggs deprived of their shell, has caused suffocation by filling the pharynx and obstructing the glottis. The writer has observed two cases in which pieces of boiled meat were impacted in the pharynx and closed the glottis; they were immediately relieved by sudden inversion of the patients, the foreign bodies dropping out. Suetonius gives an account of the case of young Drusus, adolescent son of the Emperor Claudius, who, in play, flung up a pear, which, as it came down, he caught in his mouth and involuntarily swallowed, but the pear lodged in the pharynx and he promptly died.

FOREIGN BODIES IN THE ŒSOPHAGUS.

The ordinary seats of lodgment, in the Œsophagus, of swallowed foreign bodies, are the pharyngeal and the cardiac extremities, but they may be arrested in any part of this tube, and the bodies most liable to be stayed in their downward course are the sharp-pointed, the irregular, and the

jagged; there are, however, many instances of a complete ingestion of these substances and their harmless migration in the alimentary canal to their easy discharge at stool. Sometimes those that are successfully extracted from above cause stricture of the œsophagus, whilst others that are closely impacted give rise to ulceration and fatal abscess. Littre saw a woman who died of an abscess of the œsophagus fourteen months after having swallowed a fish-bone which had there lodged. The writer made the post-mortem examination of a man, supposed to have died of acute alcoholism, and found that the patient, while inebriated, had swallowed two artificial teeth with their metal plate, which had been impacted in the œsophagus and had worked its way by ulceration into the pericardial sac, causing fatal pericarditis.

Two examples of foreign bodies that might have lodged in the pharynx or œsophagus but did not, are cited by Dr. F. H. Wiggin. The first was of a golden safety-pin, wide open, swallowed by an infant six months old. The pin was passed at stool on the second or third day; mush having been administered in sufficient quantity. The second example was that of a silver dollar flung from a distance by one man, and caught in the mouth by another, who swallowed and passed it at stool on the fourth day. Dr. Hutchins of California reported the case of a boy who had swallowed an open pocket-knife which was discharged point forward at stool, after the administration of a large quantity of mush. In Dr. Eve's collection (Case xxxi) is quoted the case of a boy of seven who had swallowed an open penknife three inches long. Although it caused some intestinal distress and griping, it was expelled blade forward, after a dose of castor oil, on the sixth day. Among many other examples of irregular substances swallowed and expelled at stool without causing any damage to the individuals, may be mentioned the following, included in Doctor Eve's collection: namely, a tined fork, pieces of glass, buttons, etc., beside the case of a man who had swallowed a full set of artificial upper incisor teeth

with their gold plate and clasps, and had discharged the whole at stool two days and eighteen hours afterward.

Measures for the removal of foreign bodies from the pharynx or œsophagus can not be too soon adopted. These consist in extraction by the mouth, propulsion into the stomach, cervical œsophagotomy, and extraction through gastrotomy.

Some foreign bodies may be extracted from the pharynx with long, suitably-curved forceps, or by means of sudden inversion of the patient as already mentioned; and from the œsophagus by specially constructed probangs, one of the earliest of which, used in this country, was devised by Nathan Smith and variously modified for removing coins, pieces of bone, etc.; or the extraction may be effected by more simple processes, as exemplified by the following case from which the writer succeeded in extracting a piece of the breast-bone of a quail so firmly impacted and so spasmodically held in the upper end of a man's œsophagus that deglutition was impossible. The foreign body was caught and brought out in the large eye of a soft india-rubber catheter half an inch in diameter used as an explorer. In another case of bone impaction in the œsophagus the foreign body was pushed into the stomach and no bad effect ensued. A second illustrative case requiring propulsion of the foreign body, is that recorded by Dr. Eve (Case xxviii) of an infant sixteen months old who had swallowed a tenter hook, one inch and three quarters in length, which at first lodged in the œsophagus, but was pushed into the stomach with a probang, and passed at stool on the fourth day after a dose of castor oil. It is remarkable that in the fourteen instances of pin and of needle swallowing given by Dr. Eve, there was not a single case of lodgment of these foreign bodies in the pharynx or œsophagus.

Cervical œsophagotomy was practised, in the last century, for the extraction of foreign bodies, by Chopart, by Desault and others, and has been repeated by a host of surgeons in this country and abroad during the present century.

The removal of œsophageal foreign bodies, impacted at the cardiac extremity, through gastrotomy, though fully justifiable in some cases, must remain a very rare procedure because, when a foreign substance has reached that point, the use of a long probang is ordinarily effective in causing its propulsion into the stomach. The writer knows of the single case, and saw the patient, from whom Dr. W. T. Bull had extracted, by abdominal section, a peach pit lodged at the cardiac extremity of the œsophagus.

FOREIGN BODIES IN THE STOMACH AND INTESTINES.

Certain indigestible substances not only act as irritants to the stomach but often gradually so increase in bulk by the accession of other swallowed objects as to nearly fill the stomach, cause ulceration of its mucous membrane, obstruct the pylorus, and even extend into the duodenum.

In the year 1886 Dr. Wm. Finder exhibited, to this association, two remarkable foreign bodies taken, after death, from the stomach of a woman twenty years of age¹. These bodies, which together weighed sixteen ounces, when removed, were made up of human and horse-hair, sewing threads, grasses, and woody fibre. One of them had assumed the form of the stomach, the other was somewhat rounded. Among Dr. Finder's quoted cases of gastric foreign bodies removed after death, is that of a girl who died at eighteen years of age "with a mass of hair in her stomach six by three and three fourths inches, and a small one in the duodenum;" he mentions another case in which the mass weighed twenty-one ounces; a third case, the mass weighing four pounds seven ounces; and a fourth case of a mass weighing thirty ounces. The doctor refers also to two cases in which gastrotomy was successfully performed. The first is recorded in the *Lancet* of January 9, 1886, by Mr. Knowsley Thornton, who removed from the stomach a mass of hair weighing two pounds. The second case was treated, in 1883, by Doctor Schönborn of Königsberg, who opened the stom-

¹ Transactions of the N. Y. S. M. A., Vol. 3, p. 64.

ach and extracted therefrom a mass of hair nine or ten ounces in weight.

"Sections of two large masses of hair and string weighing eight or ten pounds," removed, after death, from the stomach, duodenum, and upper end of the jejunum of a woman eighteen years of age, who had come under the care of Dr. Blakeley Brown, were presented to the London Pathological Society (*Lancet*, 1851; Eve, Case xv). Another case of hair swallowing was reported by Dr. Crawford (*Lancet*, 1852; Eve, Case xvii). It seems that this patient recovered after having vomited several masses of her own black hair which she had been in the habit of eating; and finally passed at stool a hairy concretion "five inches in length and of the size of the dilated rectum."

Foreign bodies of the most diverse kinds have been found in the stomach and duodenum after death, or extracted during life.

A man, in swabbing his throat by direction of his physician, accidentally swallowed the swab and stick which measured more than ten inches in length, and which, several weeks thereafter, made their exit after the crucial opening of an abscess below the left nipple. He recovered. (*Medical Examiner*, 1855; Eve, Case xviii.) Professor Harrison of the Irish College of Surgeons (*Pattison's Medical Register*, 1835; Eve, Case xx), found in the stomach of an old man who died in an insane asylum, a number of rusty nails, long pieces of iron hoops, the blade of a knife, a large iron buckle, an iron hinge, and several small pieces of metal, beside a piece of iron four or five inches long that had reached the transverse colon. Case xxxv of Dr. Eve's collection is that of an insane man aged twenty-three years who died about three months after having swallowed sundry metallic and other bodies, and in whose stomach and duodenum there were more than thirty spoon-handles, some nails, a screw, four pebbles, a metal button, etc., all weighing two pounds, eight ounces. In another case, taken from Chopart, the stomach contained fifty-two foreign bodies, which together

weighed one pound, six ounces and a half. Two fatal cases of table-knife swallowing are also recorded in Dr. Eve's interesting collection. In one of these the handle of the knife was lodged in the duodenum. There are in that collection three cases in which gastrotomy was successfully performed: one for the extraction of an accidentally swallowed knife, the second for the removal of a fork, and the third for the removal of a leaden bar one half by three fourths of an inch thick, ten inches long, and weighing one pound, swallowed on a wager. The first of these gastrotomies was performed in 1635, the second in the beginning of this century, and the third in the year 1855.

In the early numbers of the *New York Medical Journal*, several cases of gastrotomy for the removal of spoons, etc., are recorded.

Among the cases of pin and needle swallows collected by Doctor Eve is the interesting example of a vast number of pins retained in the stomach and intestine, originally reported by Mr. John Marshall (*Lancet*, 1852). It was that of a woman whose stomach and duodenum contained one pound, nine ounces of pins. The duodenum was obstructed by a tightly packed mass of these pins. She was forty-one years of age at the time of her death. One of the needle swallows, a highly hysterical girl, suffered obstipation in consequence, but recovered. She had swallowed very many needles, some of which migrated to distant parts. Three hundred and ninety-five of these migratory needles were extracted from the abdominal parietes and other regions of her body.

A single pin swallowed and impacted in the intestine may be sufficient to cause death, as illustrated in a case mentioned by Sir Benjamin Brodie in his "Clinical Lectures on Surgery," as follows:

A woman was brought here with a tumor in the right iliac region. She died, and, on examining the body after death, an abscess was found connected with the cæcum, and in the middle of the abscess there was a pin.

Some swallowed substances which generally prove dangerous as soon as ingested are often expelled at stool harmlessly, but sometimes remain very long in the stomach or intestines without doing much mischief until their position is changed, by peristalsis or some other cause, when they finally give rise to the greatest distress or even death. The following case, which is given nearly in full, is a fair illustration of this assertion. It is recorded by South in his edition of Chelius' Surgery, and appears as Case xxxvii, page 266, of Eve's collection :

Of the foreign substances received into the stomach, the most remarkable account is that given by Doctor Marcet of the sailor who swallowed a number of clasp knives. In June, 1799, after having witnessed a display of jugglers' knife swallowing, he, in a drunken fit, boasted he could do the same, and accordingly swallowed four pocket knives successively. On the following afternoon he passed one knife by stool, and on the next day two more, but the fourth knife never came away, nor gave him any inconvenience. In March, 1805, in the course of two days, he swallowed fourteen knives more, but on the following morning was attacked with constant vomiting and pain at his stomach which compelled him to go to the hospital, and in the course of a month he was "delivered of his cargo." In December of the same year he swallowed, in one day, five and on the next day fourteen more knives. He was very ill on the next day and obliged to put himself under medical care, but without benefit till three months after, when, having taken castor oil, . . . he became easier, but was not aware of having passed any knife. In June, 1806, he vomited a knife-handle ; in November, he passed some fragments, and again in February, 1807. In August of the same year he was admitted to Guy's Hospital, where, at first, his account was not believed, . . . and as he suffered intense pain at the region of the stomach and a hardness was thought to be felt . . . and as his stools . . . were . . . of a deep black . . . an examination was made . . . and a portion of the knife was felt across the rectum, but could not be extracted. . . . Various attempts were made to dissolve the knives, but without success, and at last, in March, 1809, he died in a great state of emaciation. . . . One of the blades and one of the back springs were found in the intestines ; the latter, four inches and a

half long, had transfixed the colon opposite the left kidney, and projected into the cavity of the abdomen, while the other (the blade) was stretching across the rectum, with one of its extremities actually fixed in the muscular parietes of the pelvis. No stool had, however, escaped nor were there any signs of active inflammation. In the stomach were thirty or forty fragments, of which thirteen or fourteen were evidently blades, much corroded and diminished in size. . . .

There is no end to the number of queer substances swallowed by the hysterical, imbecile, and insane. A few more examples taken from Eve's collection will suffice for illustration :

In the *Provincial Surgical and Medical Journal*, is the report of a case of a boy, who actually swallowed a silk handkerchief nearly a foot square. On the third day it was dejected from the bowels, perfect in every respect, except a slight discoloration. Probably this is the first instance in which a human subject has been thoroughly wiped out with a silk handkerchief. It is said that the boy was subject to epileptic fits, an imbecile, and although not cured, was not rendered any worse by this extraordinary operation.

In the *Medical Examiner*, 1853, Doctor D. Hayes Agnew reported the case of a man suffering from mental alienation and who died from peritonitis due to perforation of the cæcum by a large mass of straw impacted below the ileo-cæcal valve. In the transverse colon were found a pair of suspenders, three rollers, and a quantity of thread. The rollers were of ordinary muslin, over one inch in width and the same in diameter.

A woman, aged fifty-seven, affected with suicidal mania, twice attempted to swallow a four-pronged iron fork, which lodged in, and was extracted from, her throat. She made a third attempt with the same fork, and this time ingested it successfully. Four years afterward the fork was extracted from the upper and outer part of her left thigh, and she died on the eighth day after the operation.

The *Lancet* for 1833, Vol. XXV, contains the relation of the case of a man sixty years old who swallowed a large egg-cup which lodged in, and obstructed, the ileum, causing his death.

Death from eating raw rice, *Lancet*, 1841, Vol. I.—This was the case of a girl aged twenty-two who had been in the habit of eating

raw rice in milk, arrow-root, etc. She was taken suddenly ill on December 17, 1836, and died on the next day. At the post-mortem examination the small intestines were found "gorged throughout" with raw rice, arrow-root, etc. The large intestines were loaded with fæces.

A young man, in a fit of delirium, swallowed a silver teaspoon which became fixed in the lower part of the ileum, and there remained for over two months, when it was extracted by abdominal section. The intestine was then stitched and the patient made a good recovery. The case was reported, in the *Medical Repository*, 1807, by the operator, Doctor Samuel White, of Hudson, New York.

Under the head of intestinal obstruction, Doctor Eve records sixteen cases, of which five recovered and eleven died. Only the title of each case needs now be given.

CASE I.—A worm and tooth discharged by the opening of an abscess in the right iliac region. Recovery.

CASE II.—Accumulation of small bones in the cæcum and colon, producing mortification.

CASE III.—Occlusion above the ileo-cæcal valve, with communication between the ileum and rectum.

CASE IV.—Obstruction in the bowels from a small piece of bone in the ileum, causing death.

CASE V.—Obstruction in the bowels from large pieces of cork in a child. Recovery.

CASE VI.—Death from intestinal obstruction, caused by water-melon seeds.

CASE VII.—A large intestinal concretion.

CASE VIII.—Intestinal obstruction overcome by yeast. Recovery.

CASE IX.—Obstruction in the colon relieved by an opening made in the groin. Recovery.

CASE X.—Strangulation of forty-two inches of the large, and nine inches in one portion and seven in another of the small, intestines, through an opening in the mesentery.

CASE XI.—Intestinal obstruction from an immense quantity of raw wheat. Recovery.

CASE XII.—Strangulation of the intestine by a diverticulum intestine.

CASE XIII.—Ninety-two shot and one hundred and twenty lum-stones found in the ileum.

CASE XIV.—Survival for forty-two days after the expulsion of forty-four inches of intestines.

CASE XV.—Strangulation of the ileum in an aperture in the mesentery.

CASE XVI.—Strangulated intestine from adhesion of the appendix vermiformis to the uterus.

(b) Of foreign bodies in the rectum, Doctor Eve records in detail twenty-three cases, all adults, one female, sex not given in five cases. Nineteen recovered, and four died.

CASE I.—A tin tumbler pushed by the patient into the rectum, then passed into the colon; failure to remove it, and death of the patient.

CASE II.—An immense number of plum-stones (about two hundred and eighty) removed from the rectum.

CASE III.—A cow's horn in the rectum.

CASE IV.—A tumbler in the rectum.

CASE V.—A beer-glass in the rectum.

CASE VI.—A preserving pot in the rectum.

CASE VII.—A half-pint flask, and subsequently a large beet in the rectum of the same patient.

CASE VIII.—Extraction of a glass goblet from the rectum.

CASE IX.—A large piece of wood in the rectum.

CASE X.—Fish-bones impacted in the rectum, causing death.

CASE XI.—A bottle in the rectum.

CASE XII.—A large plug of wood passed into the rectum. Extracted through an opening made into the colon.

CASES XIII to XXIII.—A forked stick, a pig's tail, a teacup, a glass phial, a flask, an earthen pot, a chimney sweeper's scraper, pieces of wood in three cases, a shoemaker's pincers in the rectum.

(c) Cases of foreign bodies in the intestines from penetrating wounds of the abdomen, though uncommon, are recorded here and there in medical journals and works on surgery. Doctor Eve mentions only two cases. The first, a "gunshot wound of the abdomen; the ball and bits of cloth passed per anum; recovery." The second, a "gunshot wound of the intestine; gravel stones passed per anum; recovery."

THE DIAGNOSIS AND INDICATIONS FOR TREATMENT OF ACUTE INTESTINAL OBSTRUCTION.

By J. D. RUSHMORE, M. D., of Kings County.

October 18, 1898.

It is a common observation that the abdomen is a field of difficult diagnosis. The reasons for this are found in the large number of viscera contained in the abdominal cavity, the very large space occupied by hollow organs which, in different hours of the day, vary to such an extent in their gaseous, liquid, or solid contents; the oftentimes deep-seated nature of the causes, and the impossibility, except by an exploratory laparotomy, of locating these causes; the presence, in many abdominal diseases, of such common symptoms as nausea, vomiting, pain, tympanites, constipation, imperfect action of the kidneys, and fever; and the length of time required to make sure that functional action is disturbed. In the case of intestinal disease, when constipation is present, at least twenty-four hours are needed to assure ourselves of the existence of this symptom.

Among abdominal diseases, none present more difficulties in diagnosis than acute intestinal obstruction, and yet in a large minority the diagnosis is easy. It ought never to be difficult to say in an individual case of suspected obstruction that the obstruction exists, or to state its character and location, if the patient is examined carefully and if our timidity does not prevent us from using every means at our disposal to make not a probable but an exact diagnosis. It is not too much to claim, that, employing the means at our command for an exact diagnosis, we shall be able with very rare exceptions to be as sure of our ground as if the suspected lesions were in the thoracic or cranial cavity.

The symptoms on which a diagnosis of acute intestinal obstruction is based, are pain, nausea or vomiting, fæcal vomiting, tympanites, tumor, visible coils, and failure on the part of the patient to pass either fæces or gas. Symptoms that are inconstant and subordinate are fever, the occurrence of hiccough, jaundice, and diminution or suppression of urine.

The causes, already described, that give rise to acute obstruction, are usually, but not always, situated in the small intestine; for many cases that are suffering from lesions of the large intestine that produce partial obstruction for weeks or months, finally suffer from acute or complete obstruction due to these causes. It is of the utmost importance, also, to remember that hernia may exist as the cause of the obstruction; indeed, it is the most common cause, and however wise it may be for text-book purposes to consider the subject of hernia by itself, clinically, it is absolutely necessary to remember that it may, in the case we are examining, be the origin of all the symptoms, and a failure to remember this fact has been the cause of many mortifying mistakes in diagnosis. Again, the symptoms that characterize acute obstruction may almost all be present in peritonitis, originating in diseases of the gastro-intestinal tract, genito-urinary system, suppurative processes, embolism, septic diseases, or lead-poisoning.

Our first duty to the patient, then, in a case of suspected acute intestinal obstruction is to find out whether he has a strangulated hernia. The hard, tense swelling in the groin, without impulse on coughing, associated with pain, and later with tympanites, vomiting, perhaps fæcal in character, absence of fæcal discharge or gas from the bowel, will nearly always make the diagnosis clear. In cases in which fat might partially conceal the tumor, or where the hernia has only partially descended, a simple exploratory incision made under cocaine anæsthesia will be safe, painless, and certain to show that the hernia does or does not exist. In new-born children suffering from obstruction of the bowel, the cause is sought and almost always found in the rectum. A probe or cath-

eter enables the surgeon to make the diagnosis instantly. And it would be well as a routine measure in the lying-in room to pass a catheter into the rectum of every new-born child, and in this way make the diagnosis before any symptoms of obstruction are present. These two conditions, then, are readily recognized, and being excluded, the next step would be to determine whether the patient is suffering from acute obstruction due to disease situated in the large intestine. We may find by digital examination and the use of rectal spicula or Kelly's tubes, that there is a stricture, a malignant neoplasm or other tumor outside or inside the rectum, and by one or other of these means satisfy ourselves of the condition of the entire rectum, and in some cases under an anæsthetic, of the condition of the lower part of the sigmoid flexure.

But it is the cases that are entirely intra-abdominal that present the greatest difficulty in diagnosis. As the subjects of intestinal obstruction due to fæces, gall-stones, foreign bodies, or intussusception, are considered by other writers in this discussion, they will not be alluded to here. How may we decide, therefore, whether a patient is suffering from obstruction due to mechanical or non-mechanical causes.

The origin of what may be denominated non-mechanical acute obstruction is almost always a septic peritonitis. It produces an obstinate obstruction, as a band or twist, and indeed its presence often accompanies and aggravates the obstruction due to mechanical causes. Peritonitis as a cause of acute obstruction may usually be recognized by the pulse, temperature, pain, facial expression, and constipation. Tympanites may be present in septic cases, although the abdominal wall is frequently sunken. The existence of the peritonitis prior to the obstructive symptoms would indicate that the obstruction originated in the peritonitis and was not due to a mechanical cause. Still, the diagnosis will be only a probable one. We can derive little or no help from cathartics, puncture, enterotomy or enterostomy, rectal sounds or tubes, enemata of fluid or insufflation of gas per rectum.

An exploratory laparotomy furnishes the only means of exact diagnosis. There may be good reason for not employing it, on account of the condition of the patient; but in cases that justify its employment and where the diagnosis can not be made without, it affords a certain, and not unsafe, means for obtaining knowledge upon which to base an exact diagnosis, and is justified by the gravity of the symptoms from which the patient is suffering.

When we come to consider the diagnosis of acute obstruction from mechanical causes, it is important in the first place to remember that there are no pathognomonic symptoms; and, secondly, that percentages afford little help in individual cases unless they furnish differentiating symptoms. They can at best enable us to make a probable diagnosis. And it is not to be expected, interesting and important as that knowledge is, that in the future the multiplying of statistics on which these percentages are based will do more than confirm what we already know.

In a very interesting and valuable paper by Fitz, of Boston,¹ is found the following table, which shows the value to be attached to the various symptoms of acute obstruction of the bowels. The writer says: "The statements which follow in this paper are essentially based upon the study of a series of cases collected from English, German, and French medical literature since 1880. Its claim to consideration lies in the fact that all the cases have been submitted to the severest criticism, with the resulting exclusion of a very large number. The entire number is two hundred and ninety-five."

	Strangu- lation.	Intussus- ception.	Twist.	Gall- stones.	Stricture or Tumor.
Pain,	82	70	60	83	60
Nausea and vomiting,	69	75	37	74	80
Fæcal vomiting,	47	13	15	61	33
Tympanitis,	56	33	55	56	66
Tumor,	10	69		13	27
Visible coils,	11		7		20

Stoppage of the bowels is not included in this table, and

¹Transactions of the Congress of Physicians and Surgeons, Vol. I, 1888.

when it occurs it is of course the most important symptom. But it is to be remembered that a movement of the bowels in most persons occurs but once a day; in many, once in two days; and many persons pass a single day without the escape of flatus per rectum. Again, where the diagnosis is clear, there may be in cases small fæcal discharges during the first day, and in intussusception there may even be diarrhœa. Important as constipation is as a symptom of obstruction, it is evident that in many cases valuable time must elapse before this symptom shows itself.

The above table shows that there is no symptom always present. In gall-stones, where it is noted as a most frequent symptom, pain is present in 83 per cent. of cases; absent in 17 per cent. Absent in 30 per cent. in intussusception and 40 per cent. in twists and strictures or tumors. Nausea and vomiting are most common in strictures and tumors, where they occur in 80 per cent. of the cases, and least frequent in twists, where they are present in only 37 per cent. of cases. Fæcal vomiting, upon which so much dependence is placed by some observers, is most frequent in gall-stones, 61 per cent., and least frequent in intussusception, 13 per cent. Tympanites, most frequent in strictures and tumors, 66 per cent.; least so in intussusception, 33 per cent. Tumor is present most often in intussusception and only then in 69 per cent. of cases; least often in strangulation, 10 per cent.; visible coils in strictures or tumor in 20 per cent. of cases, least in twists, 7 per cent.; not noted or absent in intussusception and gall-stones. Such figures as the above show how far we can rely on the ordinary symptoms of acute obstructions of the intestines to make an exact diagnosis in an individual case.

In addition to these symptoms there are others of minor value. The history of the patient will sometimes help us to a knowledge of the cause, but not to its location; a peritoneal band is more likely to be the obstructing cause, if the patient gives a previous history of an attack of peritonitis. The quantity of urine passed is considered by some

authorities of much value in locating the obstruction, but so much depends on the amount of fluid taken and retained, so much on the action of the skin, that the quantity of urine can have but little value as a symptom of obstruction or in locating its cause. The sudden onset of symptoms, the location of tenderness, the degree of collapse, the acuteness and sequence of symptoms, all have their value, but in a majority of cases they do not enable us to state and locate the specific cause of obstruction. The dysenteric symptoms and the ability by digital rectal examination to feel the intussusception characterize invagination. Cathartics are used, but only aggravate the symptoms and throw no light on the diagnosis except by failing to act on the bowel. Rectal tubes can only unload the lower bowels of gas, and usually fail to do that. Abdominal puncture is not entirely devoid of danger and is a very inefficient means of evacuating gas. Warm water by enema can at best carry our knowledge only to the ileo-cæcal valve, which is usually, though not always, sufficient to prevent its entrance into the small intestine,—a fact that detracts somewhat from the value of this measure. And, again, water can be made to flow back even with a safe degree of pressure through an annular stricture of the sigmoid flexure, which is the origin of the obstruction, and so lead us to infer that, because the large intestine is pervious, the obstruction must be above the valve. If atmospheric air, hydrogen or carbonic acid gas is used, we may generally force the air or gas through the valve into the small intestine, and it is more than probable that an agent which will pass through the valve that is entirely sufficient for water, will pass through a twist, a volvulus, or an internal strangulation, and it is reasonable to suppose that even in invagination the gas might pass through the central canal of an intussusception. General anæsthesia will always throw much light on the case. Tenderness, muscular rigidity, tympanites, and fat are the obstacles to a satisfactory examination of the abdomen by palpation, and these ether or chloroform will mostly overcome. The only

other means left is an exploratory laparotomy. This is to be employed when other means fail. By this means we are able in a few minutes, by direct examination of the contents of the abdomen, to recognize the cause of obstruction, to locate it, and, aided by sight, to know the condition of the intestines and other abdominal viscera, to recognize the existence of peritonitis, and usually to find its origin, and to say with absolute certainty whether the case is one of obstruction from mechanical causes or one due to septic conditions. It would seem that such a valuable measure would be more frequently employed than it is, especially in view of the fact that we have not only no better, but no other, means of exact diagnosis in many cases. To fail to employ it, then, would seem to call for explanation on the part of the physician or surgeon who is responsible for the diagnosis. In view of the danger of delay, resort to laparotomy ought to be very early in those cases where it is necessary at all. The dread of opening the abdomen has long since vanished among surgeons. We know now that with a proper preparation of the patient and the surgeon's hands and instruments, the risks of examination are slight and ought not to weigh a moment as against the dangers of the disease. To advise an early resort to laparotomy in case of acute obstruction of the intestine is only to emphasize what has been urged over and over again.

With a careful examination, then, of a case of suspected acute intestinal obstruction, employing every means at command in the investigation, we may be more certain in our diagnosis than in disease of either the cranial or thoracic cavity, for the reason that the abdominal cavity, on account of its anatomical structure, is more accessible than either of the other cavities, shut in as they are by bony walls. We have therefore abundant evidence for the statement that the abdomen is a field of exact diagnosis, and that we are not justified in the present state of surgical knowledge in making a probable diagnosis, when with little risk we may make an exact one.

The indications for treatment of acute intestinal obstructions are simple, however difficult it may be to fulfil them. Nowhere in surgery or medicine is it more important to remove the cause, at the earliest moment, if possible. In many diseases, both medical and surgical, we cannot remove the cause, and, moreover, are called upon to treat the results of causes that have disappeared; but in acute obstruction the persistence of the cause must mean not only failure to relieve, but the development of results that rapidly place the patient beyond relief by any means, and are certain to prove fatal in a short time. First in importance, then, is the earliest possible diagnosis of the origin of the obstruction by methods previously indicated. An acute obstruction of the intestine depends on so many and various causes it would be as impossible to speak of the indications for treatment of this single symptom as it would be to say what the indications for treatment of obstructions to urination are.

Following then the general order suggested in the diagnosis of acute obstruction, it may be said that there will be no two opinions about the indications for treatment in imperforate anus. In spite of the age, operation is demanded immediately, either perforating a diaphragm, if that be the obstructing cause, opening the rectum posteriorly, or making an artificial anus higher up, preferably in the inguinal region. There is now no dispute as to what ought to be done where the obstruction is due to a strangulated hernia. No reliance can be placed on other than mechanical means to reduce the hernia and save the life of the patient. Taxis, therefore, in cases that justify this procedure, will first be tried. Failing in that, immediate operation, minor or major, and reduction of the hernia if the local conditions justify it; if not, an artificial anus or resection, and end to end or lateral anastomosis done at the time of the reduction, or later if the patient's condition, general and local, makes it necessary.

When dealing with a case of acute obstruction due to chronic causes (and they are generally situated in the large intestine) there is not such urgent need of immediately

operating as in the conditions just mentioned. These cases usually give warning of the approaching acute obstruction by a gradually increasing constipation, and by removal of the cause the acute obstruction may be prevented altogether, or when that is impossible much may be accomplished in preventing and relieving the acute symptoms by securing fluid or semi-fluid fæcal evacuations. It is a matter of surprise to recognize through how small an opening intestinal discharge will take place if the intestinal contents are not allowed to become solid; while if this condition is not secured the case will speedily pass into the state of complete obstruction with all its dangers. When, however, in spite of the use of all the means at our disposal, we have failed to overcome the obstruction, there is nothing left but to make an opening into the colon above the obstruction, preferably in the left inguinal region, and if the patient's condition warrants, to delay opening the gut for twenty-four hours until adhesions have formed between the intestine and the walls of the abdominal incision. In many cases such delay is inadmissible and the operation must be completed at once. Probably surgeons would agree that the time for the use of non-operative measures must not exceed forty-eight hours.

In cases of acute obstruction due to septic peritonitis from whatever cause, as no medical measures have any effect on the disease, operative interference is justifiable. Often the condition of the patient will not warrant operation; but in selected cases the patient is entitled to have used the only measures that promise relief. Enough cases have been saved from this almost universally fatal condition to encourage us in future efforts to save these desperate cases. If an operation is done at all it necessitates laparotomy and the thorough irrigation of the abdominal cavity with some bland fluid; the treatment of the cause of the septic inflammation; and, thirdly, a thorough evacuation of the bowel by enterotomy. Nothing short of these measures will fulfil the indication for treatment in septic peritonitis. It is unnecessary to say that even such means will in the majority of cases fail

on account of the gravity of the local and general septic condition of the patient.

The treatment as well as the diagnosis of fæcal impactions, gall-stones, foreign bodies, intussusception, and volvulus are not included in this part of the discussion.

A few words are necessary with reference to the treatment of internal obstructions from strangulation by adhesions, vitelline remains, appendicitis, slits, pouches, diseased Fallopian tubes, etc. Treatment of these conditions must be surgical. Under medical treatment the mortality is total. Fitz gives a table of thirty cases treated medically, all fatal; and one of sixty-seven cases treated surgically with twenty-six recoveries, or 39 per cent. Twists and knots are recorded as occurring in thirty-four cases. In this paper the author states that "death is therefore to be regarded as the probable result of this lesion unless the surgeon affords relief. Under surgical treatment one-fifth recovered."

In treating, therefore, a case of acute intestinal obstruction, we are confronted by a condition which under medical treatment results, according to most authorities, in a mortality of 75 per cent. from all causes, excluding hernia. Whether this appalling death-rate is due to the condition *per se* or to faulty methods of treatment we cannot at present positively say. There has been a growing tendency of late years toward the belief that surgery would be able to reduce this mortality materially. The experience of some authors, however, leads us to believe that little or nothing is to be expected from surgery. For instance, Ashhurst's experience in operative cases¹ is as follows: "Of 346 cases collected by Ashhurst, the mortality was as follows: Intussusception in 65 cases, mortality 74.4 per cent.; volvulus 29 cases, mortality 71.4 per cent. Strangulation by bands 119 cases, mortality 67.8 per cent. In the aggregate of 346 cases from all causes the mortality after the operation was 69.3 per cent. We thus see that the chances in favor of operation are as 95 [the percentage of deaths claimed by Macdonald]" to 69.3,

¹ "Surgical Diagnosis and Treatment," MacDonald, p. 243.

or a saving of nearly 25 per cent. In Ashhurst's earlier statistics he found the mortality to be 67.6; and argues that, contrary to the history of most operations, the gravity of this one increases rather than diminishes as it is more often resorted to." Again in the paper by Fitz, already referred to, the author says, without comment, in concluding the section on intussusception,—“The mortality after surgical treatment was thus 80 per cent. against 69 per cent. following medical treatment.” On the other hand Wiggin¹ “considers that operations done within the first forty-eight hours will give a mortality of 22.2 per cent. Ashhurst's mortality in invagination was 74.4 per cent. without time limit. Greig-Smith² says, the mortality “of cœliotomy for intestinal obstruction is high, probably more than 70 per cent.” Schram and Curtis put it between 62 and 69 per cent. There can be no doubt that delay is the chief cause of mortality. We know how successful early herniotomy is surely in the face of recent exploits in abdominal surgery, early cœliotomy for intestinal strangulation ought to be only a little less successful. Before abdominal distension has come on, before the bowel has become inflamed, and before the patient's strength is exhausted, I have no hesitation in affirming that in competent hands, cœliotomy for intestinal obstruction would not have a mortality above 20 per cent. In my personal experience including over 110 operations the mortality has been nearly 40 per cent. In the last 30 cases there have been 6 deaths.

Other authors, as Maynard,³ give tables of successful cases of acute obstruction of intestines, but they cannot be quoted in this connection as they are not contrasted with the success in non-operative cases. The time-limit placed upon the operation in intussusception cases by Wiggin, serves to explain largely the discrepancy of statistics by different writers. The statement made above by Fitz would lead to the inference, not probably intended by the author, that

¹ Da Costa's Modern Surgery, p. 644.

² Abdominal Surgery, Vol. II, p. 662.

³ The Surgery of the Alimentary Canal.

preference should be given to medical over surgical treatment in invagination because the mortality was 80 per cent. to 69 per cent. in favor of the former, while, if we scan the figures, it is instantly apparent that only two cases were subjected to operation before the third day. All the other 34 were operated after that time and six were cured even then. Surgeons will always decline to compare results of treatment based on statistics of this character. A point to be emphasized in this discussion is that there are very great risks in treating acute obstruction of the bowel by medical means; the risk of employing forcible mechanical means to relieve a patient in whose case the diagnosis is often only a probable one, the risk of using unjustifiable force to overcome obstruction when the exact local conditions are not known, the risk of not even knowing whether the obstruction in many instances has been overcome after distension, the risk of loss of time within which surgical treatment may be expected to secure success. These risks far outweigh the dangers of laparotomy and the accompanying anæsthesia.

What we need most at the present time is a record of cases of acute intestinal obstruction treated by the surgeon from the beginning of the attack. Such a record of a sufficient number of cases would enable us to decide whether surgery or medicine offers the best chance for a patient who is suffering from a condition that up to the present time has a death rate of from 75 to 95 per cent. Statistics based on a study of cases under surgical treatment in this city for a period of five years, would probably enable us to furnish figures that would go far to settle the question as to the relative merits of medical and surgical treatment in this condition. This Association could not do a greater service to the profession than to collect through a committee the data on which the answer to this question could be given.

Fitz concludes his very valuable paper, already referred to, with these words: "In the light of published experience of the past eight years, the medical treatment of acute obstruction is limited to the use of injections during the first three

days, under sufficient degree of pressure, within fixed limits, to determine the patency of the large intestine. If it proves impassable, the case is no longer medical, but surgical. If the large intestine is readily distended, and a diagnosis of gall-stone is admissible, and the condition of the patient is not urgent, opium is to be given; laxatives and electricity may be tried, but they are of doubtful expediency. If medical treatment is of no avail, and surgical treatment is refused, the efforts of the physician are restricted to the relief of pain and distress by narcotics, intestinal punctures, and gastric siphonage."

In conclusion, acute intestinal obstruction is diagnosed by exclusion. Its seat is fixed by injection. Its variety is determined by its seat, the age, antecedents, and symptoms of the patient. Its treatment is surgical on or after the third day, if the symptoms are urgent, and forced injections fail to relieve.

Surgery recognizes the great value of all the means of diagnosis that medicine employs in intestinal obstruction. Of these means, surgery has contributed its share. It offers, in no boastful spirit, its aid to medicine, not as a substitute but as a supplement. The surgeon would offer his help in the interest of exact medicine. While in many cases the physician can make an exact diagnosis by the means at his disposal, the surgeon can furnish in doubtful cases knowledge acquired by experience in recent years which will make the diagnosis in every case exact. So that, the physician and surgeon working together, it is not too much to claim that the diagnosis of acute intestinal obstruction is made not by exclusion but by direct examination; its seat is fixed not only by injection, but by inspection. Its variety is determined not only by its seat, the age, antecedents, and symptoms of the patient, but by actual demonstration, by sight and touch. And finally, its treatment is surgical not on or after the third day, if the symptoms are urgent and forced injections fail to relieve, but before the third day. The surgeon claims the privilege in any operation, the responsibility

for which he assumes or shares, not only to do the operation, but to decide at what time it shall be done. The physician by the very limitation of his means of diagnosis and treatment of acute intestinal obstruction has oftentimes to wait and see. The surgeon points out a better way,—to see and then wait.

DIAGNOSIS AND INDICATIONS FOR TREATMENT IN CHRONIC INTESTINAL OBSTRUCTION.

By LEROY J. BROOKS, M. D., of Chenango County.

October 18, 1898.

In beginning permit me to say that I have purposely avoided statistics and detailed reports of cases as unnecessarily burdensome to this portion of the discussion. That I have drawn from the knowledge of others and have even used their exact language where it better expressed the idea to be presented, is acknowledged, and, I trust, accepted as a necessity. When Dr. Lewis A. Sayre visited the London hospitals and first presented his opinions concerning "hip-joint" disease he stated to the learned professors, of whom his audience largely consisted, that "if he knew as much as they concerning the pathology of hip-joint disease he would know as little as they concerning the treatment."

The trend of modern investigation of intestinal obstructions has been toward the surgical treatment, but beyond that there appears to be but very little advance in fifty years. Sir Thomas Watson and Erichsen gave quite as clear and definite a picture of the symptoms and of the pathological conditions producing them in 1850 as do Treves and Hutchinson to-day. There is no field wherein lie more uncertainties and contradictions. Moreover its literature furnishes an abundance of errors, and especially in two directions: first, that conservatism withholds action while waiting for definite knowledge; and, second, that hasty operation precipitates the demise of the patient.

It is difficult to separate the consideration of acute from that of chronic conditions, and I must necessarily repeat something of what has previously been said.

Four steps are necessary in reaching a diagnosis: first, a

study of the clinical history; second, a physical examination before any drug is administered; third, a second examination after irrigating the stomach, emptying and douching the distal end of the intestine, and fourth, an exploratory operation.

J. Grieg Smith suggests as proper preliminaries: first, an enema of an ounce of brandy in three ounces of milk; second, wrap the patient in hot blankets and surround him with hot-water bottles; third, watch the patient for an hour.

He points out that the behavior of the patient is suggestive of the character of the obstruction, and that watching the movement and sounds of the intestines materially assists in localizing it. Rectal enemata of large size serve a purpose in localizing by abdominal percussions a colonic stricture, and by measurement of quantity held, measure the relative distance, but with a tympanitic intestine overlying the result is quite often futile. Passing the whole hand into the rectum may serve to determine the location and character of the obstruction in the colon, but the procedure has many objections, strongest of which are the possible injury of diseased intestinal wall and complete paralysis of the sphincter, an exceeding misfortune to both friends and patient. This should not be resorted to except with an exceptionally small hand and under rare circumstances.

The digital examination of both rectum and vagina will often afford evidence not otherwise obtainable. Kelley's tube gives us some information of rectal conditions. The ordinary rectal tube is deceptive and worthless.

The diagnosis of chronic intestinal obstruction demands our consideration, not so much because other diseases resemble it, but because so many conditions produce the obstruction, and because the locality is as varied as the cause. The essentials, therefore, are a diagnosis of the character and exact location of the obstruction, and a discrimination between a chronic faecal accumulation not dependent upon an organic constriction of the intestine.

Since all the processes resulting in a chronic obstruction develop so gradually that duration itself eliminates the dis-

eases that temporarily resemble it, there is less breadth for diagnostic study than in the acute forms. Thus in peritonitis the clinical history of fever, tenderness, abdominal rigidity, declare the disease before an obstruction has occurred, except as the obstruction occurs in the progress of the acute inflammatory action, which removes it from the field assigned to me. The three questions before us, then, are: first, Has the patient a chronic intestinal obstruction? second, What is its character? third, What is its location?

The clinical history of all the forms of chronic obstruction presents practically the same picture, varying only in degree. It is outlined by the following symptoms: first, abdominal distress, constipation, and eventually obstipation in the sense of an organic accumulation from any cause; second, pain of colicky character, varying in severity and irregular in its occurrence; third, nausea and vomiting, varying in character according to the location of the stricture; fourth, tympanites, depending for extent upon the location and degree of stricture; fifth, marasmus, or cachexia; sixth, concomitant symptoms such as tenesmus, jaundice, hiccough, abnormal urine, and fever depending on the consequences rather than upon the stricture itself.

We have as causes of stenosis of small intestines, stricture, simple or malignant; binding of adherent intestine; adhesions of a coil in the form of a loop; matting of adjacent coils; compression by contracting adhesions; shrinking of the mesentery; traction; volvulus; obstructions by gallstones and foreign substances; pressure from tumors. Of large intestine: stricture, simple and malignant; bending of adherent colon; compression by adhesions; volvulus of cæcum; neoplasms; tumor outside of gut; enterolith.

Positive discrimination between the conditions producing constrictions resulting from inflammatory products either in the small or large intestine is absolutely impossible without surgical exploration. Obstructions from neoplasms, displaced organs, pelvic tumors, are diagnosed by the presence of the growth.

Of the conditions which aid us in reaching a conclusion we should consider first, age. Chronic obstruction is rare in infancy, and when present is due to intussusception.

Between two and forty we find bands, adhesions, tractions, and the constrictions due to the results of inflammatory action, and obstructions from gall-stones. From 40 to 75, malignant growths may present. Secondly we should consider sex. The reports of the last ten years have changed the relative proportions of constrictions due to peritoneal or mesenteric inflammations from 180 males to 118 females as given by Treves, to a large preponderance of females, due to the increasing number of pelvic and abdominal operations upon that sex.

The simple colonic strictures appear in the ratio of eleven females to one male, while the cancerous strictures are about equal. Fæcal accumulations occur oftenest in females, three to one. Intussusception is found, according to Treves, in thirty-eight males to thirteen females. Gall-stones, four in females to one in male. Social conditions seem to have no bearing.

Third, occupation. Active labor in middle life is most prolific in small intestinal inflammatory strictures. "Cork cutters" are accredited with a special tendency, and "horse-shoers" to the same and cæcal volvulus.

As to frequency, malignant strictures of the colon and sigmoid are accredited with furnishing the large proportion of chronic obstructions, but if we may judge from the very large number of post-operative inflammatory constrictions reported in the journals during the past year, it would seem that this second class outnumbers them. The third in frequency are the simple ulcerative strictures of the small intestines; fourth, compression by the neoplasms and pelvic tumors, and fifth, miscellaneous and rare conditions, not easily classified.

Pain.—Pain is not as indicative of the character of an obstruction as it is of the degree. Continuous and severe pain is associated with the malignant strictures, yet a large

number of these pass through their whole course without pain sufficient to designate the type until, perhaps, a final acute obstruction closes the scene. It is manifested earlier, however, and as the intestinal closure is reached more quickly than in simple strictures its intensity may be considered to possess diagnostic indications of malignancy. Nausea and vomiting is a part of the history of all strictures and if severe and persistent may as a rule designate a malignant tendency. It is, however, more dependent upon location and degree than upon character. The nature of vomited material is dependent upon the location.

Cachexia.—The most important indication of malignancy is the form of cachexia. The true cancer cachexia possesses distinctive characteristics. The countenance is pale or waxy, associated with cardiac and renal changes and œdemas, rapid emaciation and exhaustion. The *marasmus* from auto-infection which complicates all strictures with intestinal accumulations gives rather a jaundiced or sallow skin with furred tongue, loss of appetite, slower emaciation, and less implication of other organs. There is nothing particularly diagnostic in concomitant symptoms such as jaundice, fever, hiccough, and urinary changes. Jaundice is connected with less than half of the cases of obstructions from gall-stones (Treves reports but two out of twenty-two). It may be marked when a diseased liver forms part of the obstructing agent.

Tubercular strictures are most common in the ileum; syphilitic and cancerous in the sigmoid. As to location the diagnosis is aided by a knowledge of previous operation, or of peritonitis-dysentery, specific ulcerations, tuberculosis, known presence of foreign bodies, etc. The nearer the stomach, the more severe the symptoms of pain, nausea, vomiting, and cachexia. Vomiting gives us some evidence of the location by its character. Early and continuous overflow of bile occurs when the stricture is above the clavus. If the stricture is in the jejunum or upper part of the ileum there are occasional attacks, becoming feculent but not ster-

coraceous until complete obstruction occurs. If in the lower ileum it becomes stercoraceous earlier; if in the colon vomiting is irregular, scant, occurs late, and at the last may be continuous and stercoraceous for many days.

In carcinoma pain may be connected with the growth. If the cancer is in the lower part of the colon there is frequently pain in the sacrum, radiating towards the genital organs and following the course of the sciatic nerve. As a rule the pain of all obstructions of the small intestines is centered at the navel, but may occasionally be at point of stricture. In constrictions of the small intestine it more frequently comes on three or four hours after taking food; if in the colon it occurs irrespective of meals. Its intensity depends upon the following factors: nearness of obstruction to the stomach; tightness of the constrictions; the character of and persistence in giving food.

Tympanites.—It is generally absent in constrictions of the duodenum and jejunum; it increases as the stricture is lower down, becoming marked and continuous when in the colon. If in the ileum the distension is in the middle of the abdomen. In the colon the horse-shoe of the large intestine and even the cæcum and lower ileum stand out plainly, and during the colicky paroxysms the small intestines show either obliquely or transversely one fold above the other, forming the so-called ladder pattern. It is, however, a symptom that masks other evidences and really furnishes little aid to a positive diagnosis, either of the character or location.

Post-operative obstruction nearly always occurs in the small intestine and most frequently at the junction of the small and large intestines. Von Wake's sign of local meteorism, an elastic, gradually enlarging distension, extending upward along the bowel from the point of obstruction, and accompanied by increased peristalsis, has been confirmed by several observers. Rosin, Rosenbach, and others insist upon the presence of indican in the urine, in complete obstruction, and claim that if it persists after operation the obstruction has not been removed. Other morbid conditions show indi-

can, however, so its presence is not pathognomic. Boborygrmi furnish some indication of location by the cessation of the sound at the point of stricture. Tenesmus, bloody stools, and grooving of fæcal contents point to obstruction in the sigmoid or rectum. The presence of a distinct tumor in the wall or around the intestine indicates location of the obstruction, although in 40 per cent. of cancerous strictures the growth is not detectable through the abdominal wall. The diagnosis of a fæcal accumulation is made by the character of the mass, it being irregular, and capable of indentation, which remains after pressure is removed.

Constipation is one of the most persistent and characteristic symptoms of obstruction and occurs in 75 per cent. of cases, alternating with diarrhœa in 25 per cent. First yielding to cathartics it becomes more and more obstinate until a final complete obstruction either precipitates acute symptoms or the patient dies from exhaustion. In the earlier history of chronic obstruction the tendency to accumulation of fæces at given points, if not masked by tympanites, may indicate the location of the stricture. Functional constipation cannot always be distinguished from gradually increasing strictural obstruction, but a long history of dyspepsia, flatulency, constipation relieved by cathartics without increasing evidences of obstruction, the mental depression and insomnia, the absence of localized pain and tenderness, and the tendency to fæcal accumulations, help us to discriminate. Chronic intussusception is occasionally indicated by the presence of a tumor, the character of which is too illy determined to possess diagnostic value.

The diagnosis of organic stricture from adynamic obstructions, resulting from paresis, or suspension of the forces that propel the intestinal contents, is involved in the greatest difficulty and has been the source of more errors in diagnosis than any other form. The most striking symptom is extensive tympanites. While in obstructions from mechanical causes the peristaltic action of the intestines can be seen on the surface of the abdomen, paralysis from over-

distension not having taken place, in the paralytic form the abdominal surface is smooth and the outlines of the intestinal coils not perceptible. In this form the expulsion of gas and intestinal contents is prevented by the formation of flexures, and the compression of some parts by the distended loops.

Internal strangulated hernias, such as the ophthalmo-mesentericas, foramen Winslow, intersigmoid iliac-subfascia, etc., are not distinguishable from other obstructions. The diaphragmatic, according to Lichenstein, has been detected in but five out of twenty-five cases.

An acute obstruction supervening or as the closing event of a chronic obstruction is not an infrequent, and is occasionally the first, revelation of the existence of the chronic condition. It presents the usual history with the addition of reduced vitality. A condition not referred to in the discussion to-day is the occurrence of stercoral ulcers at the cæcum in chronic obstructions of the descending colon. I have seen three cases, in two of which I was called to operate for a supposed appendicitis. In these cases the perforation of the ulcers and the production of local peritonitis centered the ulceration upon the cæcal region.

The fourth consideration is that of exploratory laparotomy. If we exclude from the list of causes tumors either within or without the abdominal cavity, such as carcinomas, presenting distinct growths and characteristic history and faecal tumors, it leaves us a large number of causes of chronic intestinal obstruction in which the diagnosis is obscure both as to locality and character. In a general way we discriminate between obstructions in the large and small intestines, but this still leaves the diagnosis obscure, and so we are brought to the question of exploratory laparotomy. It focuses, however, another question, if obstruction is found: Shall an operation be performed, it being self-evident that a diagnosis alone possesses little value?

Except in rare instances, there are no means of overcoming a chronic obstruction outside of surgical procedures.

The operation should be resorted to in chronic progressive diseases resembling obstructions, even though the diagnosis is doubtful, where there is an unquestioned obstruction the nature and location of which is undetermined, and where the condition of the patient justified the operation for the complete relief of the patient, when found. Without doubt, conservatism in this respect sacrifices many lives, and it cannot be too strongly urged that the exploration be made as soon as it is known that an obstruction, which can only be relieved by surgery, exists.

Indications for Treatment.—Aside from care in feeding, lavage of the stomach, and attention to hygienic measures, surgery offers the only means of treatment of chronic obstructions, excepting fecal accumulations from chronic constipation or of the adynamic type. The treatment for these is to remove the accumulated mass and stimulate the parietic intestinal walls. More careful technique in abdominal and pelvic operations will doubtless lessen the number of post-operative obstructions. The avoidance of nerve injuries, keeping the peritoneal surfaces moist to lessen adhesions, and leaving no rough surfaces or epithelial adhesions, will produce better results and are important indications toward preventive treatment.

The operation should as a rule be at the point nearest to the obstruction, if in the cæcum or ascending colon, on the right side; if in the descending colon, on the left side; in other cases or where the obstruction is not located, in the median line. Of the various operations offered us, intestinal anastomosis is indicated in cicatricial stenosis of the intestines; in inoperable carcinoma, if located sufficiently high to permit the formation of an opening below it; in irreducible volvulus and intussusception, when the parts affected present no evidences of gangrene and resection is unfavorable on account of unsatisfactory general or local conditions; as a substitute for circular enterorrhaphy when the resected ends differ in size, and in congenital atresia of the intestines. Lapar-enterotomy is indicated when the obstruction is due to a

foreign body, gall-stone, or enterolith, or pedunculated fibrous polypus. Enterectomy is indicated when obstruction is due to malignant growth, removal of foreign tumors that cannot be excised, and when the obstructed intestine has become gangrenous. Lateral implantation will be used where the divided ends differ materially in size, and colotomy in inoperable carcinoma of colon, sigmoid, and rectum. Puncture of intestine may be used, with external support, to relieve distension in some cases of adynamic obstruction, or, if unsuccessful, the accumulations in the intestines may be displaced or removed.

INTESTINAL OBSTRUCTION DUE TO INTUSSUSCEPTION AND VOLVULUS.

By JOHN F. ERDMANN, M. D., of New York County.

October 19, 1898.

Dr. Edwin Martin in a paper read before the Philadelphia Pediatric Society on November 9, 1897, stated that he was particularly impressed with the rarity of intussusception, as out of eight hundred personal communications sent out by him, most of them being answered, the returns brought him records of but fifty-four cases, and that men of the widest experience in surgery, medicine, and pediatrics reported that they had never seen a case. Such a statement is apt to be not only misleading as to the frequency of this disease, but also has a tendency to create an undesirable impression of diagnostic acumen upon the profession at large. It has been the fortune of the author to see four cases within a period of four weeks' time, during February and March of this year, and three more cases within the three years preceding, while a typical chronic case came under his observation a number of years ago, and two cases, chronic in nature and due to malignant growths, were seen in the practice of a brother surgeon during the past year and a half; in addition two cases were reported to him during the first half of the year. Such a series of cases under the observation of a single operator tends to the belief that the disease is much more frequent than most authors admit.

Cases of intussusception may be classified according to their intensity after the manner of Raffinesque, as *ultra-acute*, death occurring in twenty-four hours; *acute*, terminating within the first seven days; *sub-acute*, lasting from two to four weeks, and *chronic*, lasting from three weeks to months before a fatal determination.

Intussusception is the cause of fully 30 per cent. of all cases of acute obstruction. The greatest proportion of cases of intussusception, fully 50 per cent., occur in children under ten years of age, and of these more than 50 per cent. occur in infants under twelve months. Between the ages of five and forty to fifty the number of cases diminish, and after forty or fifty the frequency of occurrence is again noted. This condition may be explained upon the grounds of periods of debility, occurring in infancy and extreme adult age.

Anatomically the following varieties of intussusception will answer: the *ileocæcal*, in which the ileocæcal valve forms the apex of the intussusception; *ileocolic*, in which it is made up of ileum and cæcum passing into the colon, and the *ideal* or *enteric* variety, made up entirely of small intestine. Of these the enteric is the most frequent. Very frequently upon autopsy intussusception is found that is due to post-mortem changes and not to any condition existing before the death of the patient. These cases can readily be excluded by their previous history.

The causative factors of intussusception are variously ascribed to former conditions of health or preceding physical conditions; conditions causing diarrhœa; factors of a pathologic origin, and factors that originate in the anatomy of the intestine. Factors of an anatomic origin include long and lax mesentery, although the author has been unable to demonstrate the existence of such an anatomical condition in any of his cases. Another of the anatomic causes and the one receiving greatest weight is the musculature of the intestinal coats. These muscle-fibres, the longitudinal ones primarily and the circular secondarily, produce the intussusception through irregular peristalsis in the following manner: Contraction of the longitudinal fibres occurs with a retraction of a portion of the gut from below into the part undergoing the irregular peristalsis; after a time contraction occurs in the circular fibres when a grasping of the intussusception takes place, which may and frequently does continue

to such a degree as to produce strangulation. It is this contraction of the circular fibres that prevents the reduction of the mass in the irreducible non-strangulated and gangrenous types.

Among the pathologic causes are tumors, usually of the internal coats, which by their weight produce the irregular peristalsis. These are chiefly polypi and endotheliomata; also imperfections in the intestines, as Meckel's diverticulæ. One case was reported by the author in the *New York Medical Journal* of April, 1898, the history of which is included in this paper. Another of these cases of Meckel's diverticulæ as the causative factor in this disease occurred recently in the practice of a fellow-surgeon.

Under the preceding physical conditions, it is stated that a child of robust physique is less liable to suffer from this condition than one more puny and delicate. Our cases do not lend any weight to this argument, as we find that the majority were well-nourished children. Former conditions of health, barring a process which is accompanied by diarrhœa or by a pathologic condition of the intestines, apparently cannot be considered as factors of any great importance, except in patients in whom debility is well marked, these having less resisting power to intestinal diseases. It would seem to the author that all conditions and factors which tend to produce diarrhœa and vomiting are primarily the cause of the irregular peristalsis, excluding, of course, those cases classed as distinctly pathologic in origin, and these causes are changes of temperature, exposure of the abdomen, due to insufficient clothing during the day and improper protection at night; foodstuffs that disagree (and here we must include the artificial foods, as many children cannot take some of these without evil effects, as well as unripe or decayed fruits, tainted meats, etc.), and finally injudicious feeding by overloading the stomach, as seen in many children; also, insufficient precaution in preparing foods, etc.

The symptoms and signs of intussusception are pain,

vomiting, tenesmus, blood in the stool or a bloody mucous dejection, restlessness, tumor, and, later, manifestations of obstruction, peritonitis, and sepsis. Pain has been an ever-present symptom in the author's cases. The abdomen is tender to the touch, manifested by the patient, if too young to speak, by flinching or crying upon palpation. Vomiting has been present in but three cases and these were the cases of more than twenty-four hours' duration when seen by the author. It is well to remember that in many of these cases the onset is frequently preceded by diarrhœa and vomiting, so that in many of the cases in which vomiting was an early manifestation it may have been but an accompaniment to the pre-existing condition of health.

There may be, and frequently is, an evacuation of more or less extent, due to fæces in the intestine below the seat of the intussusception. This evacuation is not accompanied by blood or bloody mucus. Later there are passages which consist of blood and mucus, or may be largely composed of blood or mucus simply tinged with blood. The presence of blood is readily ascribed to the obstruction producing strangulation of certain parts of the vessels and increasing arterial and venous pressure sufficient to produce hæmorrhage by diapedesis and even by rhexis. Tenesmus is frequently observed following the first few passages. The patient does not lie quietly in bed during the early hours of the disease, but is constantly tossing and moaning, and continues doing so until the gut is reduced or until gangrene and sepsis are established. If after an injection the restlessness and moaning cease, *i. e.*, during the first twenty-four to forty-eight hours, it can be safely stated that reduction has taken place.

The proverbial sausage-shaped tumor cannot be found in all instances. In the case of three patients operated upon by the author and palpated by most able diagnosticians, no tumor was to be felt through the abdominal wall, but the symptom-complex was so perfect of intussusception that abdominal section was performed and a tumor found. The reason was readily explained as in two cases the tumor

was found well under the ribs in the left hypochondriac region, and in the third well under the right lobe of the liver. Digital examination frequently proves the presence of this condition, as the palpating finger comes in contact with the mass in the rectum. In one of the author's cases, in which no tumor was palpated externally, it was thought that the very tip of the finger came in contact with a fold of intestine foreign to the anatomy of that part. This disappeared upon injection. The child became quiet and slept for eight hours, when it again became restless and had another pink mucous dejection. Nothing was felt upon digital examination, but upon opening the abdomen the tumor was found in the left hypochondriac region.

Later the symptoms become aggravated, obstruction is complete, the pulse is rapid and feeble, and all the manifestations of peritonitis and sepsis are present.

The treatment consists of mechanical, expectant, and operative procedures for the relief of the intussusception. Under the mechanical methods we have the use of air and water distension of the bowel. The danger incurred in the use of air is an over-distension with rupture of the intestine. Little can be said in favor of this method of reducing the intussusception as it does not have the mass-like pressure action that is produced by the use of water. As the pressure cannot be gauged as easily as when using water, the method should be passed over at the present date. Enemata of water to be successful should be used during the first twelve or twenty-four hours, *i. e.*, before adhesions form, but in all cases of no matter what duration, it should be used first, bearing in mind the fact that the reservoir should not be more than four feet in height from the body of the patient. These are best given with the patient in the inclined posture or suspended by the feet. Although water passes the ileo-cæcal valve with great ease in the cadaver and has been demonstrated time and again as passing in the living, it should be borne in mind that enemata are prone to prove unsuccessful in cases in which the tumor is above the trans-

verse colon. This is due to the fact that when the tumor is above the transverse colon, the effect of the water pressure is more of a pulling action upon the receiving gut than of a driving action upon the apex of the intussusception. Massage of the abdomen and the tumor, when found, should be done while the water is being introduced. Although the dangers of the use of water are similar to those of air, they are less prone to occur, owing to the weight pressure upon the apex of the tumor being followed more frequently by reduction than is the use of air. It cannot be too strongly stated that this type of taxis should not be used with any greater degree of frequency or duration than manual taxis in a strangulated hernia; for the conditions are certainly allied. Should the injection be followed by no result, operative procedure should be advocated as strongly as one would in a hernia that has not responded to taxis.

When pain is not severe, obstruction not complete, and tenesmus with bloody mucus not marked, the case can be carefully watched, as these are the cases likely to become chronic and later be followed by a spontaneous cure by sloughing off of the tumor. Certainly, with the present state of aseptic operative procedures, this method of treatment can never more be considered seriously. We know that these cases can never be claimed as true cures, owing to the likelihood of stricture formation following the sloughing process, and that they are very prone to be followed by obstruction, demanding at a later day an emergency operation which is likely to have a more serious aspect than would the question of primary operation for intussusception.

The author cannot agree with those who state that children bear operations poorly, and is quite satisfied that when the cases are seen early, say during the first thirty-six hours, the chances for recovery of the patient are extremely favorable. One of the writer's cases of recovery reported in this paper, a child under seventeen weeks of age, was operated upon during the first thirty-six hours. Another, a child of four months, and twenty-two days old, was operated

upon during the first twenty-four hours. The relationship of recoveries between strangulated hernia and intussusception with regard to previous duration is very similar. The longer the duration, the greater the mortality, due in each instance to the same causes—shock, exhaustion, gangrene, and sepsis.

After exposing the tumor the following procedures are in order: Reduction, artificial anus, entero-anastomosis, partial resection, typical (?) resection. Reduction is best accomplished by pressing through the intussusciens upon the apex of the mass in such a manner as to drive the intussusceptum through its receiving coat. Traction upon the extreme ends should not be practised, as it is liable to result in injury to the walls of the gut of such extent as to be followed either by immediate rupture or destruction of portions requiring a further and more protracted operation. Pressure from behind need never be severe enough to injure the integrity of the intestine in any way, as in all cases in which there are neither adhesions nor gangrene the reduction is extremely easy. In the irreducible variety, no matter what the condition of the gut, one of the more severe operations is indicated.

The establishment of an artificial anus requires no words from the writer, for all are thoroughly familiar with the steps of procedure and the indications warranting it. When the patient's condition will admit of further procedure than the formation of an artificial anus, partial resection or typical resection should be done. An entirely unnecessary operative procedure, and one productive of as much shock and requiring as much time as an operation of more radical results, is entero-anastomosis. Partial resection, *i. e.*, resection of the intussusceptum through the receiving coat or the sheath, is advocated by Barker, Grieg Smith, and others, and a modification of it is suggested by Paul and described in the London *Lancet*, 3, 30, 1895. The operation of Barker (Fig. 1) consists in first placing a row of sutures at the entering end of the intussusception, so as to include the

sheath or intussusciens and the intussusceptum, then making a longitudinal incision in the ensheathing portion, placing suitable ligatures about the mesentery of the ensheathed portion, cutting off this ensheathed portion, and removing it

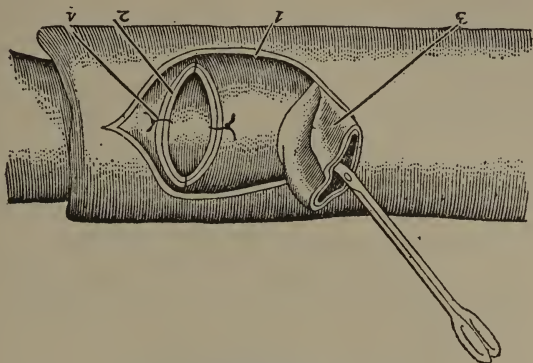


FIG. 1.—BARKER'S OPERATION.

1. Incised intussusciens.
2. Proximal end of intussusceptum.
3. Distal end of intussusceptum.
4. Suture in entering and returning gut.

through the gut, or, if long enough, through the anus. A few sutures are placed in the cut proximal ends, all hæmorrhage is checked, then the longitudinal cut in the sheath is sutured, and finally the abdominal wound is closed. This operation is indicated only when no preventive adhesions exist between the invaginated and ensheathing portions.

As a modification of this operation the writer would suggest that the row of sutures uniting the intussusceptum to the intussusciens be omitted, and that before cutting off the intussusceptum the healthy entering gut be brought through the longitudinal slit, first tying off the mesentery, then cutting off the intussusceptum and removing it, and completing the operation after the manner of end-to-end anastomosis described by Maunsell.

Paul's operation is a modification of that of Barker, and, we take it, was advocated with a view to shortening the duration of the operative interference, but has the objectionable

feature of requiring the surgeon to add another instrument, a light metal tube with expanded ends, to his now overstocked store. It is also an operation that can be performed only in selected cases, *i. e.*, those in which the caliber of the gut is retained to a degree sufficiently large to admit such a tube or improved device. The operation is performed as follows (Fig. 2.): After a preliminary row of sutures connecting the intussusceptum and intussusciens, the gut is cut longitudinally as in the Barker operation; then the returning and entering layers are cut, and the tube is pushed into position. A stout ligature is then tied about the intussusceptum so as to include the tube; finally the intussusceptum is cut off.

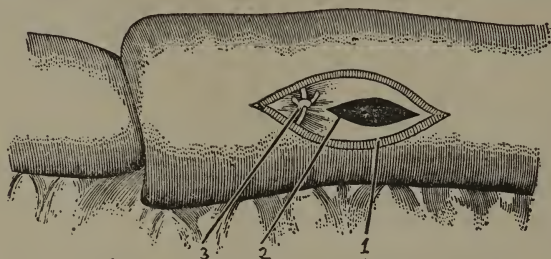


FIG. 2.—PAUL'S OPERATION.

1. Incision through intussusciens.
2. Incision through intussusceptum.
3. Ligature above the metal tube.

The incision in the outer layer is then closed in the usual manner. The features commending the operations of Barker and Paul are rapidity and diminished danger of soiling the peritoneal cavity. An objection is that the operation is more than likely to be followed by a diminution of the caliber of the gut.

In chronic intussusception, advancing in nature, the treatment resolves itself into an end-to-end anastomosis (after reduction as far as possible has been performed). Typical resection with end-to-end anastomosis should only be undertaken in those cases in which the patient's condition will warrant prolonged interference. The choice then lies in the hands of the operator between the use of Murphy's button,

the Maunsell operation, and direct end-to-end anastomosis. Owing to the fact that more than one intussusception can take place, it is advisable to thoroughly examine the entire intestinal tract before closing the abdomen. Owing to the great variance in the mortality-rate as given by three most

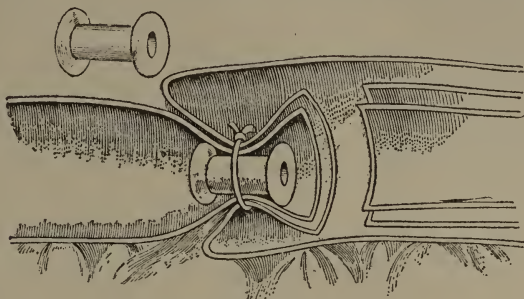


FIG. 3.—PAUL'S OPERATION.

Longitudinal section, showing the position of the metal tube.

excellent observers during the past three years, Rydygier, 1895, seventy-five per cent; Wiggin, 1896, twenty-two per cent., and Gibson, 1897, fifty-three per cent., the writer intentionally avoids presenting statistics which might further bewilder the reader.

CASE I.—Reported before the Section on Surgery, New York Academy of Medicine, March, 1895. *Medical Record*, p. 475, 1895. Male, eight and a half months old, seen on the fourth day of the disease. Enemata had been unsuccessfully employed. No tumor was palpable either through the abdominal wall or per rectum. Celiotomy was performed and an intussusception of the enteric variety found in the left hypochondriac region. The mass was partially reducible; the remaining irreducible portion, almost six inches in length, was gangrenous. This gangrenous portion was removed and an end-to-end anastomosis with the Murphy button done. Septic peritonitis existed at the time of the operation. Death occurred within twelve hours.

CASE II.—Reported in the *New York Medical Journal*, April 16, 1898. F., male, aged nine years, was seized at four o'clock Friday afternoon in August, 1897, with colicky pain in the abdomen, limited to the right side and of rather severe character. During

the night he vomited the contents of the stomach and some bile, and passed a large quantity of blood and clots by the bowel. There was marked tenesmus and frequent attempts to have a movement of the bowels throughout the following day, but with no further result than the passing of mucus and blood. His temperature was said to have been normal, while the pulse was slightly increased. On Sunday his condition showed all the evidences of severe shock, and upon palpating the abdomen a rather elongated tumor could be mapped out in the right side. In the absence from the city of Dr. Carl Beck the case was referred to me by the family physician. I saw the patient at nine o'clock on Sunday night and found the following condition: Countenance

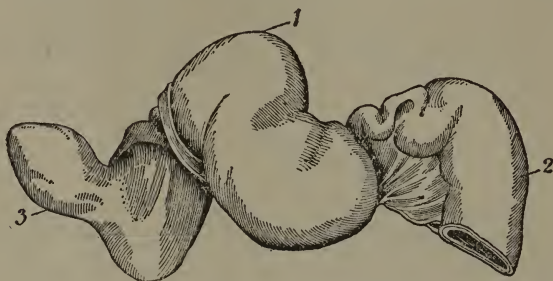


FIG. 4.—SPECIMEN OF INTUSSUSCEPTION.

1. Intussusciens.
2. Ileum.
3. Meckel's diverticulum (inverted) and intussusceptum.

anxious, temperature 101° F., pulse 128, abdomen distended and tympanitic, painful to the touch, and a sausage-shaped tumor extending from the right iliac fossa to the costal cartilage of the tenth rib. I had the patient transferred to St. Mark's Hospital, opened the abdomen at ten o'clock, about fifty-eight hours after the onset of the symptoms, and found an intussusception of the enteric variety, the apex of which was within six inches of the ileocæcal junction.

The mass was irreducible and gangrenous, and the mesentery was gangrenous to within an inch of its attachment to the lumbar column. In addition, the intestines were deeply engorged and a quantity of pus was found in the cavity. Resection of the mass and an end to end anastomosis with the Murphy button was performed, the abdomen thoroughly washed out with salt solution, and a gauze pack placed down to the anastomosis. The patient

bore the operation very well and reacted nicely. During the two days following the operation he was given sixty cubic centimeters of Marmorek's serum without any evidences of improvement. The condition of sepsis increased, and the patient expired at the end of the fourth day following the operation.

Upon examining the specimen a mass about two inches long was seen protruding at the distal extremity which was made out to be Meckel's diverticulum that had become inverted and evidently was the cause of the intussusception. Upon cutting the specimen open it was found to measure thirty-three inches in length. This extreme length was due to the tight manner in which the intussusceptum was packed in the ensheathing intussusciens (Fig. 4).

CASE III.—Female, aged four months, seen September 18, 1897. Condition extremely bad. Rapid, feeble pulse; cyanosis; apathetic. Temperature 101° F.; abdomen distended, quite tympanitic. No tumor upon palpation, due to abdominal distension. Previous history vague; had been ill for a week or more. The family stated that seventeen physicians had seen the patient during her illness. A diagnosis of intussusception had been made by the majority and operation advocated by some but was refused. Finally the family begged that an operation be performed. This was done within an hour of admission and an ileocæcal intussusception found, readily reducible, but a general septic peritonitis existed and death followed within twelve hours.

CASE IV.—Female, seventeen weeks old, well-nourished. Had had a previous day of diarrhœa, and was seized with pain, restlessness, and bloody mucous dejections. Sent to the writer by Dr. Francis Huber, February 18, 1898. Enemata had been unsuccessfully tried. No mass or tumor palpable either by rectum or abdominal wall. Operation performed within the first eighteen hours; tumor found in right hypochondriac region and was of the ileocæcal variety. Reduced readily. Patient stood the operation nicely but was taken ill with pneumonia; then another lobe became involved; finally recovery resulted. Suppuration occurred in the superficial layers of the wound. Discharged in five weeks.

CASE V.—Female, exactly five months old. Sent to the writer by Dr. Joseph Huber, February 23, 1898. Patient had suffered from tetany for some weeks. Bottle-fed and poorly nourished. History of previous diarrhœa and of intussusception of a few hours' duration. When seen by the writer there were pain, restlessness, blood-tinged mucous stools, but no tumor upon abdominal palpa-

tion. By digital examination a protruding mass high in the bowel could just be felt. Several enemas were given, and upon digital examination the protrusion could not be felt. She was placed in bed and slept quietly for eight hours. Upon awakening she became restless, and had a blood-tinged mucous stool. Operation was performed. The tumor was found in the left hypochondriac region, extending down to the lumbar region. It was of the ileocæcal variety. The tumor was fixed in this region and upon searching for the cause of its irreducibility it was found that a hernia of the small intestine had taken place through the foramen of Winslow. Several coils being reduced before the fixation of the intussusception could be relieved, the tumor was readily displaced and reduced by pressure through the intussusciens upon the apex of the intussusceptum. This child also recovered, but during three weeks following the operation there was absolutely no evidence of union in the abdominal wound. The intestines protruded upon several occasions. Secondary sutures were placed twice, and upon two occasions blue pus was present upon the dressings. During the third week repair began. The child was discharged between the sixth and seventh weeks.

CASE VI.—Male, thirty-eight years of age, admitted to Gouveneur Hospital, March 17, 1898. When seen by the writer he stated that he had had colicky pain that morning. Examination: Slight evidence of shock; pain in abdomen; local tenderness in left hypogastric and lumbar regions; vomiting; had a rather large bloody mucous stool. Palpation: Very sensitive upon left side; a tumor elongated in shape could be felt in the left lumbar region. Three pints of saline solution were given after a three-pint simple enema; both were negative in results. Bloody stools continued at intervals. Operation not indicated by patient's general condition. March 18th. Three-pint injection of saltwater followed by bloody mucus only. Pain eased some. March 19th. Enema of three pints of soap and water. Pulse 100.2° F. Tumor disappeared. Calomel, 10 grains, and eleuterin, $\frac{1}{10}$ of a grain, were given. March 20th. Large movement. March 21st. Patient discharged.

CASE VII.—This case occurred in the practice of Dr. M. Dantes during March, 1898, who cited the history to me with a view to treatment. Female, aged three and one half months, ill two days when seen by Dr. Dantes. She had had diarrhœa and vomited a few times during these days. When seen there were bloody, mucous stools, pain, and restlessness. No tumor found by abdom-

inal palpation, but evidences by rectal examination. Enema proved of no avail. Operative interference refused ; child died on the twelfth day of the disease with all the evidences of a septic peritonitis. During the latter days of her life foul-smelling discharges were evacuated but no sloughs.

VOLVULUS.

Volvulus is a disease of advanced life, and consists usually of an axial rotation of a portion of the bowel with occlusion sufficient to cause either partial or complete obstruction. The twisting may be and frequently is followed by gangrene of the engaged loops or portion of the bowel. The causes are chiefly anatomical as predisposing with exaggerated peristalsis as an excitor. The anatomical cause is either a preternaturally long mesentery or a normal mesentery elongated, possibly by a weight in the bowel or hernia. About

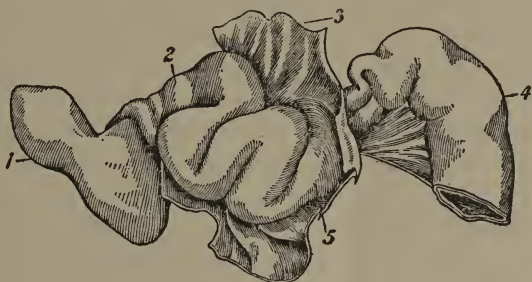


FIG. 5.

1. Meckel's diverticulum.
2. Intussusception.
3. Intussusciens split open.
4. Ileum.

50 per cent. of all cases have been found involving the sigmoid, and here the cause is eminently the long mesosigmoid, usually found giving great mobility to this portion of the intestines. The next frequent site of volvulus is the lower ileum or cæcal region. Men are said to suffer from volvulus four times more frequently than women.

The symptoms of an attack of volvulus are sudden onset of pain more or less general in the abdomen and finally localized; occasionally a tumor corresponding in outline to the

intestine, this tumor varying on percussion from a dull to a highly tympanitic note; pulse accelerated; obstruction following after the bowel is emptied below the point of twisting. These symptoms may suddenly disappear as a result of self-cure by untwisting, or as a result of an injection. In case this does not occur a progressive peritonitis, first localized, then generalized with concurrent gangrene, takes place.

The treatment resolves itself into the use of enemas and operative interference. If an enema has been used successfully there is usually an evidence of gas or fæces coming from the anus, or retention of the fluid for a length of time, while the abdominal symptoms are immediately ameliorated.

It has recently been stated that numbers of cases of volvulus of a minor degree untwist either during palpitation of the abdominal wall or as a result of peristalsis due to some cathartic agency. Should injections *plus* massage fail, then celiotomy should be performed with a view of releasing the twist, and carrying out any of the following operative procedures found necessary. These are, in cases not requiring excision of gangrenous gut, the stitching of the mesentery so as to shorten it or to prevent the twisting recurring, or the removal by excision of a portion of the long and lax sigmoid with its mesosigmoid, and then performing end-to-end anastomosis. Where gangrene has taken place the course of procedure is exactly as in the case of gangrene in strangulated hernia or intussusception. During three years of an emergency service only three cases have occurred in Gouveneur Hospital. One of these came to the writer in 1896. The patient, a female about thirty-eight years of age, was moribund at the time seen, with a history of a week's illness, onset with sharp abdominal pain, complete obstruction after a small movement; then localized pain in the left lower region of the abdomen. Distension was marked when seen by the writer; pulse, 140; temperature subnormal. The patient was cyanotic. No operation; death in a few hours. Autopsy: A volvulus was found involving the sigmoid and rectum with gangrene of fourteen inches of gut.

The second case occurred in the service of the late Dr. O. J. Ward, in August, 1897. A male, aged thirty-seven years, with a history of epigastric pain of slight character for some time. Five days prior to admission had an attack of diarrhœa followed by complete obstruction. Upon admission severe pain was localized in the epigastrium, general abdominal tenderness, dulness over lower abdomen; tympanites over the right hypochondrium; pulse, 120; respiration rapid; first evidence of vomiting since illness began. Abdominal section was performed. General fibrinous peritonitis with a volvulus of a part (?) of the small intestine was found. This was readily reduced after breaking up some adhesions. Patient died in thirty hours.

The third case occurred in the early summer of this year in the service of Dr. John Rogers, and was seen by the author. The patient was an elderly Polish Jew with a large, irreducible hernia. When seen by the writer he was suffering from symptoms of a strangulated hernia, but upon operation by Dr. Rogers, a volvulus of the ileum was found with other contents of the sac. The patient died within forty-eight hours from shock (?).

Although this third case was not a typical case of volvulus, nevertheless, the twisting evidently was the cause of the irreducibility, the patient having suffered from a reducible hernia for years.

THE TECHNICS OF THE OPERATIVE TREATMENT OF INTESTINAL OBSTRUCTION.

By FREDERICK HOLME WIGGIN, M. D., of New York County.

October 19, 1898.

The various conditions for which operations are usually undertaken for the relief of intestinal obstruction may be enumerated as follows:

1. Strangulation of the gut by bands, extensive adhesions, or apertures.
2. Volvulus.
3. Compression by tumors external to the gut.
4. Obstruction due to foreign bodies, such as gall-stones and enteroliths, and
5. Fæcal masses.

When the patient is suffering from the acute form of obstruction, little time should be lost in making preparations for his relief, once the diagnosis has been established and he has consented to operation; for it is a fact that a very large proportion of all who succumb to operations for intestinal obstruction do so because of the delay which has occurred between the onset of the condition and the time of operation. Hospital patients, who are more under the guidance of the physician, are operated upon more promptly than private patients, and consequently have a far better chance for recovery than the latter. As haste is a prime requisite when our patient is suffering from an acute form of intestinal obstruction, little can be done in the way of preparing the room selected for the operation. A room, preferably with a north light, should be selected; and, if time permits, the carpets, furniture, and hangings should be removed, the room thoroughly cleaned, and the woodwork and floor, after being scrubbed, should be washed over with mercuric chloride

solution, 1 to 500. But, as a rule, in the more acute forms of obstruction there is no time for this careful preparation of the room. When this is the case, all that should be done is to remove all the loose pieces of furniture, care being taken to avoid raising any dust; and sheets wet in either carbolic-acid solution, 1 to 20, or mercuric chloride solution, 1 to 500, should be placed over the carpet. A kitchen table and one or two smaller tables which have been well scrubbed and washed with a carbolic or mercuric chloride solution are placed in the room together with several basins and pitchers, which have been thoroughly cleaned and sterilized. While this is in doing, a washboiler should be thoroughly cleaned and filled with water, which should then be sterilized by boiling for an hour. Some of this water should be rapidly cooled by placing it in pitchers and surrounding them with ice water. In extremely urgent cases the hot water may be taken from the ordinary faucet, but this should be avoided when possible. If the case is urgent and the patient is suffering much pain, it is well to defer the preparation of the abdomen until the administration of the anæsthetic. If there has been much vomiting or great abdominal distension, it is wise to follow Kussmaul's method by introducing a tube into the patient's stomach and washing it out. This is easily accomplished if the tube is carried along the roof of the mouth, and as it passes down the œsophagus the patient is instructed to swallow. The stomach is washed out with a quantity of saline or boric-acid solution by the siphon method. In this way large quantities of gas will be removed, and also considerable irritating matter.

In cases in which the patient has been vomiting persistently, and is feeble in spite of resort to the ordinary cardiac stimulants, it is well to introduce from one to three pints of saline solution into the circulation, through the veins, prior to beginning the abdominal operation.

The instruments should have been already prepared by boiling for ten minutes in a 2 per cent. solution of carbonate of sodium, and should then be placed in trays containing

sterilized water. The towels for use in the operation should be sterilized, either by the use of a sterilizer or by boiling. A large quantity of saline solution (one teaspoonful to the quart) should be on hand.

These preparations having been attended to and the patient anæsthetized, the skin is made ready for the incision by being thoroughly scrubbed with tincture of green soap, special attention being paid to the umbilical region. A solution of peroxide of hydrogen is next applied, after which a lather is made and the skin shaved. The soap is next washed off with water, and this is followed by an application of equal parts of alcohol and ether to remove the remaining fatty substances. This is, in turn, followed by an alcoholic solution of mercuric chloride, 1 to 500. A final washing is given with sterile water or saline solution. Before the incision is made the bladder should be emptied by catheter.

When the site of the obstruction cannot be definitely located, the incision should be made a little to the right of the median line, between the umbilicus and pubes, and should be about four inches in length. It should be made through the rectus muscle, because there is less danger of subsequent hernia than when it passes through the linea alba. Such an incision is desirable, as it gives ready access to the cæcum, which should be the first part sought after, and also gives the operator a good command of the small intestine, a large portion of which is usually found in the pelvis. It is also possible through such an incision to make a satisfactory exploration of the colon, and it can be readily extended upward if this should become necessary. It is better to have the incision a little too long than too short, as the longer incision facilitates the manipulations.

When the abdominal cavity has been opened, if greatly distended coils of intestine obstruct the view, the distension should be relieved by aspiration or incision. The incision so made should then be closed by suture, and the spots disinfected by the application of a few drops of hydrogen dioxide. As has been previously stated, the hand should be introduced

into the abdominal cavity and an effort made to locate the cæcum. If the latter is found to be much distended, it is good evidence that the obstruction is located in the colon; but if, on the other hand, it is empty or only moderately filled, then it is most probable that the stoppage is in the small gut. If there is reason to believe that the obstruction is in the colon, the hand should be passed over the entire length of this intestine until the obstruction is found. It is presumed that the rectum has been explored prior to operation. When the small bowel is involved, it is well, if possible, to seek the collapsed portion and follow it down to the obstruction. The operator should begin by looking for the non-distended coils in the region of the cæcum or about the brim of the pelvis, as advised by Mr. Hulke. The various hernial orifices should also be examined. Sometimes two forms of obstruction co-exist, and it should be borne in mind that one of them is often overlooked.

If the obstruction proves to have been due to bands, the latter should be ligated on both sides near their attachment, which is usually the mesentery, and removed. When the gut is found to be gangrenous, it must be resected in the manner to be hereinafter described. If the obstruction is due to a diverticulum or to an adherent appendix, these portions of the bowel should be removed in the ordinary manner, and the opening in the gut closed with Lembert sutures. While volvulus usually occurs in the sigmoid flexure, it may occur in the small intestine, and in the latter case it is usually necessary to draw the intestine out of the abdominal cavity. It is the writer's experience that, contrary to the usual authorities, this does no harm, provided the exposed bowel is properly protected with gauze or soft towels wrung out of hot saline solution. The following case illustrates well this point:

J. K., forty-five years of age, married, and a native of Ireland, was admitted to Ward 11, Bellevue Hospital, on October 1, 1898. For about a year previously, he had suffered more or less from colicky pains in the abdomen, but they had yielded readily to

household remedies. Eight days prior to admission, while working in the fields, he was taken suddenly with a chill and a feeling of dizziness. He had been troubled for several days prior to this with obstinate constipation. He went home and summoned a physician, who blistered his abdomen, and tried, but without success, to move the bowels by cathartics and enemata. All this time the man was suffering from nausea and vomiting and complete loss of appetite, and there was pain which he referred to the right side and umbilical region. His physician, being unable to give him relief, advised him to go to the hospital for treatment. On admission, temperature, 99.8° F.; pulse, 108; respirations, 22. Physical examination showed the patient's face to be pale and drawn; the abdomen was considerably distended, and the right rectus muscle seemed rigid. The whole abdomen was tender to the touch, but especially so over the umbilical region. The lower part of the abdomen was blistered and raw. There was no dulness on percussion, and no tumor discoverable on palpation. An enema consisting of two quarts of saline solution was administered, with a fair result. At this time the patient was supposed to be suffering from a catarrhal appendicitis. Temperature, 100° F.; pulse, 60; respirations, 20. On October 3 it was noted that he was suffering from much pain, and an ice-bag was applied to the inguinal region. Temperature then, 100.2° F.; pulse, 94; respirations, 20. On October 4 his condition was about the same, and calomel was administered, without result. It was recorded on October 6 that the patient felt much more comfortable in the morning, but by 6:30 p. m. the colicky pains recurred, and these were followed by an intense, steady pain, referred to a point just above the umbilicus. A saline enema was administered by the house surgeon, with fair result, but it did not relieve the pain; so he then administered morphine hypodermically. Notwithstanding this treatment, the pain continued to increase in severity, and, the general condition of the patient becoming worse, he was stimulated with strychnine and nitroglycerine. About 11 p. m. the patient was seen by the writer and by Dr. Joseph B. Bissell. It was decided that he was suffering from acute intestinal obstruction, and that an operation was immediately demanded. Ether was administered at once, and the field of operation was prepared as already described. An incision was made, about three inches in length, through the right rectus muscle. The cæcum was located, and the appendix was found to be normal. A systematic examination of both large and small intestine was then made, and, as no bands could be felt, the

collapsed bowel, which began at the cæcum, was withdrawn. On following it up to the upper portion of the ileum, a point was found where the gut was twisted upon itself and apparently constricted. Above this point the intestine was distended. Several small bands were found passing over the intestine, and these were broken up. During the examination the portion of intestine withdrawn was kept warm and moist by being wrapped up in towels wet with warm sterilized saline solution. Before being returned to the cavity, the intestine was washed off with hot sterilized saline solution, and then, the patient having been turned slightly on one side, the bowel was returned to the abdominal cavity, partially by the aid of gravity. The general peritoneal cavity was next irrigated with hot sterilized saline solution, at a temperature of 110° F., and a quantity of it was allowed to remain. The abdominal wound was closed by layers, as the muscular tissue was very deficient. The wound was sealed with ten per cent. iodoform colloid and cotton, without drainage. The patient rested well during the night, and exhibited no shock. On the following day it was recorded that, with the exception of slight abdominal pain, he felt well. The bowels moved spontaneously on that day. His further convalescence was uneventful, and the wound healed by primary union.

In those cases in which the obstruction is found at the time of operation to be an intussusception, the best method for reducing the invaginated portion of the bowel seems to be that wherein the tumor is encircled below its apex by the finger and thumb, while the intussusciens, or sheath, is held a few inches lower down, the apex of the tumor being pushed in an upward direction. Traction from above the tumor should not be employed. If, however, the tumor prove to be irreducible, it is the writer's belief that the method described by the late Prof. H. Widenham Maunsell (see Fig. 1) is the best yet devised for treating this most unfortunate complication caused by delay. A slit is made in the intussusciens, and gentle traction is exerted on the intussusceptum until its neck appears outside the opening in the intussusciens. The base is then transfixed with two straight needles armed with horsehair, and the intussusceptum is amputated one fourth of an inch above the needles, leaving a fair stump

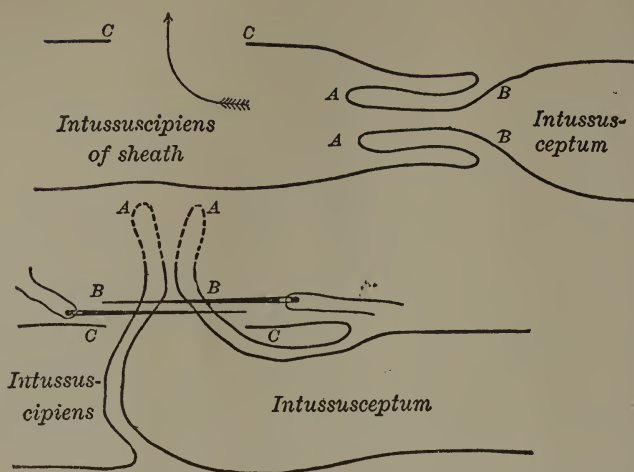


FIG. 1.—Diagram of Longitudinal Section of Intestine, showing an acute irreducible intussusception, and the method of its treatment. C C, Longitudinal opening made in the superior border of the intussusciens; A A, apex of intussusceptum; B B, neck of the intussusceptum.

beyond them. The sutures are now passed through the invaginated bowel, caught up in the interior of the bowel, divided, and tied. This having been accomplished, the invagination is reduced and the longitudinal slit is closed.

When the obstruction is due to a neoplasm, the latter should generally be removed. Intestinal surgery has improved so much of late years that these growths can usually be excised; and when this can be done, it is better to do so by the method to be described than to perform colotomy. When, however, it is deemed inadvisable to resect the portion of bowel containing the growth, the colon should be opened by the operation described by Nydls. An incision, four inches long, is made over the portion of colon to be opened, and in the direction of the fibres of the external oblique muscle. When the peritoneal cavity is opened, the bowel is drawn upward until its mesenteric attachment is on a level with the external incision. A slit is then made in the mesentery, and a glass rod is passed through, and iodoform gauze wound around the ends of the rod. The rod is left in

position until adhesions have formed; then the gut is opened. If the fistula is to be a permanent one, the divided edge of the upper portion of intestine is attached to the borders of the skin, and the edges of the lower end are inverted and closed by suture, after which the segment of gut may be returned to the peritoneal cavity. If, on the other hand, the fistula is to be a temporary one, an opening is simply made in the bowel.

When the intestinal obstruction is due to a neoplasm external to the gut, the new growth should be removed, if possible; when it is not possible, a fæcal fistula must be established above the point of obstruction. Fortunately, at the present time there are few intra-abdominal neoplasms that cannot be successfully removed, provided the patient is not moribund when the operation is begun.

When the obstruction is due to gall-stones or enteroliths, these bodies should be pushed above or below the point where they are found, and then removed through an incision, rather than an opening made at the point where they have been lodged, as at the latter place the gut is likely to be damaged, and is not so likely to heal promptly. The opening left in the gut after their removal is to be closed with Lembert sutures. If, however, the foreign body cannot be easily dislodged, the portion of gut containing it should be excised, and an end-to-end anastomosis effected in the manner hereinafter to be described.

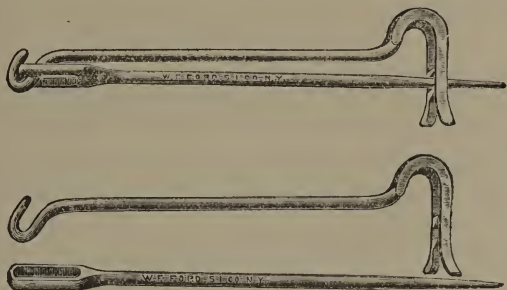
When the obstruction is dependent upon fæcal masses, these should be removed. This can best be done by the employment of small doses of calomel and soda, accompanied with the use of saline enemata. The enema is best given with the patient lying on the right side, a fountain syringe being used for the purpose, but its reservoir should not be elevated more than three feet above the patient's body. A bulb syringe should not be used for this purpose, for, in the first place, it injects the fluid irregularly and with too much force, and consequently only a small quantity can be employed; and, in the second place, it is apt, with careless use, to admit

air to the bowel. The fluid for the enema should have a temperature of 100° F., and should be introduced into the canal slowly, being frequently intermitted as the patient complains of a feeling of distension or of intestinal colic. It should be continued if both of these sensations cease. The patient should be encouraged to retain the fluid as long as possible, as the object of the enema is to allow the absorption of the water and the softening of the mass, rather than the stimulation of peristalsis. The first effort frequently fails to bring away more than a little fæcal matter, but the latter has commonly a foul odor in cases in which the fæcal accumulation has lasted for some time. After several hours have elapsed, it is well to repeat this procedure, as the non-irritating character of the fluid usually causes little discomfort.

In a case in which the writer was called with a view to operating for intestinal obstruction, the statement was made that ordinary cathartics and enemas had failed to produce any result. The patient was vomiting, and had been unable to retain nourishment for some days. On examination of the abdomen, no special point of tenderness could be found, but there was dulness over the entire length of the colon. Permission was given to the writer to supervise the administration of a saline enema. This was given in the manner just described. Two quarts were administered, and were retained for about three quarters of an hour. When this finally escaped, a few small particles of fæcal matter came away with it, and these had a very foul odor, indicating long retention in the gut. A few hours afterward a similar enema was given, and this was repeated on the following morning, small doses of calomel having been administered meanwhile. The third enema was followed by a copious movement, and the patient then made an uneventful recovery.

When the gut is gangrenous or in a doubtful condition, it is wise, as already stated, to remove it. An end-to-end anastomosis should be effected with the Murphy button, or, preferably, by some form of suture, such as the method suggested by the late Prof. H. Widenham Maunsell, or the

writer's modification of it. The original method of Maunsell was fully described by the writer, in a paper entitled, "The Technique of Maunsell's Method of Intestinal Anastomosis," which was read before this association on October 17, 1895, and published in the *New York Medical Journal* for December 14, 1895. In the writer's simplification of the operation, which consists in eliminating the invagination and the slit, the steps are as follows: The portion of intestine to be excised having been located, it is brought outside the cavity, accompanied by about six inches of healthy intestine on either side. It is next emptied of its contents above and below the diseased spot, by passing it between the finger and



FIGS. 2 and 3. — McLaren's Intestinal Clamps.

thumb and gently pressing it. The empty gut should be clamped on either side of the diseased portion of bowel at a point six inches distant, to prevent the escape of fæcal matter at the time of excision or during the subsequent manipulation. A useful instrument for this purpose is the McLaren clamp (see Figs. 2 and 3). The general peritoneal cavity should be protected with flat, sterilized sponges wrung out of hot saline solution. The portion of intestine to be removed is excised by means of a V-shaped incision, having its apex in the mesentery and its lateral borders on either side of the diseased area (see Fig. 4). The mesenteric vessels are ligated before being cut, by passing a needle armed with cat-gut around them and tying them. The wound in the mesentery is closed by means of a continuous or an interrupted

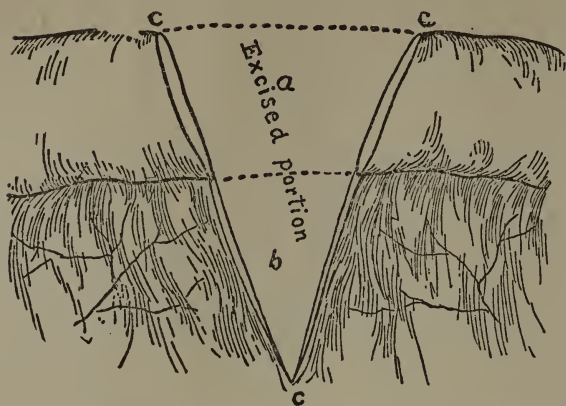


FIG. 4. — *a b*, Portion of intestine and mesentery to be removed; *b b*, mesentery; *c c c*, lines of the incision.

suture (see Fig. 5). After the divided ends of the intestine have been carefully washed with hot saline solution, followed by a small quantity of a fifteen-volume solution of hydrogen dioxide, the proximal and the distal ends are united by means of two sutures, which are passed through all the intestinal coats. The first suture is placed at the inferior or mesenteric border, and is passed in such a manner as to include a portion of mesentery on both sides (as shown in Fig. 6). It is then tied in the bowel, and the ends are cut short. The second is placed directly opposite, at the highest point of the

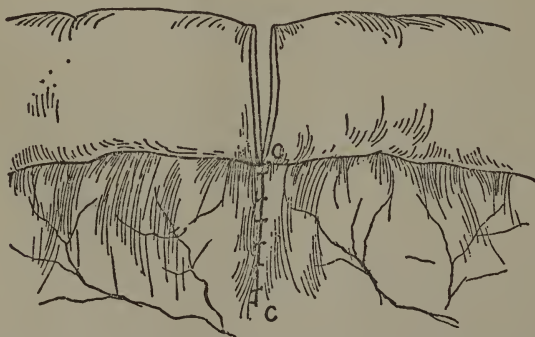


FIG. 5. — *c c*, Incision in mesentery united by continuous suture.

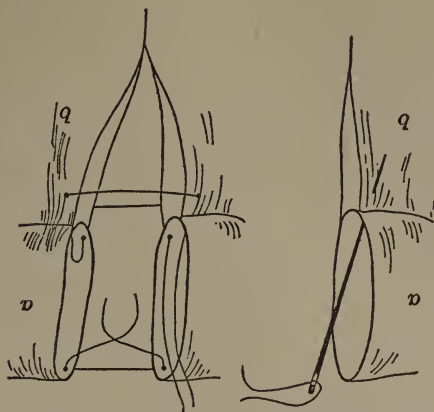


FIG. 6.—*a, a*, Segments of bowel; *b, b*, segments of mesentery.

superior border, and temporarily secured with a clamp. On either side, and half way between the upper and lower, the third and fourth sutures are passed in a similar way, and clamped. The other sutures are passed in the same way, the needle going from within the gut and piercing all the coats, then back through the peritoneal, muscular, and mucous coats to the interior of the other segment of bowel. The ends are then tied in the bowel. This process is continued with all the sutures, with the exception of the last one or two. Here the Lembert suture is substituted. If the sutures have been properly introduced, about one fourth of an inch from the edge, and tied sufficiently tight, it will be found

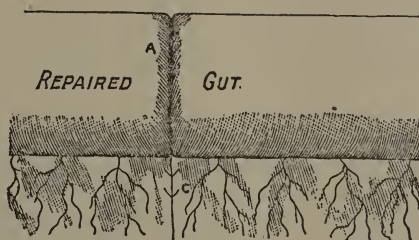


FIG. 7.—This figure shows the intestine after the completion of the anastomosis. *A*, line marking the point of union between the ends of the bowel, showing that the peritoneal coat is well turned in, and that the sutures and knots are all inside the gut.

that the peritoneum is turned in and stitches are no longer visible (see Fig. 7). If some of them have been so loosely tied that the sutures are visible in the peritoneal coat, it is best to insert a few Lembert sutures at these points. Before closing the last one or two sutures, it is well to introduce into the gut one or two ounces of a saturated solution of the sulphate of magnesium, to insure the early action of the bowels. The sutured portion of bowel should now be washed with a small quantity of a fifteen-volume solution of hydrogen dioxide, then washed with saline solution, and returned into the abdominal cavity, which should also be washed with saline solution before the abdominal wound is closed.

Usually one row of silkworm-gut sutures is passed through all the coats, from the skin to the peritoneum. These deep sutures should be inserted about one inch apart, and should be loosely tied, to allow for swelling, which ordinarily takes place as soon as the patient rallies from the operation. The edges of the skin are approximated, either by a continuous catgut suture or by a subcutaneous suture. After the wound is closed, it is well to use the hydrogen dioxide, and follow it with ether or alcohol, for the purpose of drying the skin. The wound is then sealed with a ten per cent. solution of iodoform in ether, and a little cotton, after which the usual gauze dressings are applied.

For some time past it has been the writer's opinion that the chief point of value in the Maunsell method lies in its demonstration of the fact that sutures can be passed through all the coats of the bowel with impunity, and that the invagination and the slit are unnecessary. The following case is illustrative of this point :

L. M., eighteen years of age, was admitted to Ward 12, Bellevue Hospital, as the writer's private patient, August 2, 1898. She was suffering from bilateral pyosalpinx. On August 4th, after the usual preparations, the abdominal cavity was opened by means of an incision, two and one-half inches long, in the left rectus muscle. The intestine was found to be adherent about the fundus of the uterus and the tubes. These adhesions were separated, and the

tubes exposed. As both tubes and ovaries were diseased, the uterus was removed, being amputated just above the internal os. After this had been done, the appendix was examined and found to be inflamed and injured; so it was removed. Further examination of the bowel showed that the peritoneal coat covering a large proportion of the circumference of two and one-half inches of the ileum had been torn in separating the adhesions. An attempt was made to close the peritoneum by means of Lembert sutures, but it was found to dangerously narrow the calibre of the gut. It was therefore thought best to resect the injured portion of the bowel. This was done, and the sutures were inserted in the manner already described. Two ounces of a saturated solution of sulphate of magnesium was thrown into the bowel just before final closure. A small rent in the peritoneal coat some distance above the resected portion was closed with a Lembert suture. After the bowel was washed with hydrogen dioxide and saline solution, it was dropped back and the abdominal wound closed as previously described. The operation was a long one, yet only nine ounces of ether was employed. Before the patient regained consciousness, a tube was passed into the stomach and the latter washed out, and one pint of decinormal saline solution left there. She reacted well, and was completely conscious in two hours. On August 5th the patient felt well, and the bowels moved three times. She had not vomited since the operation, and took eight ounces of peptonized milk every four hours. On the morning of August 6th the temperature was 99.8° F., pulse 104; in the evening, temperature 100.8° F., pulse 104. On the following day the temperature was 98.8° F. and pulse 76 to 96. At this time it was reported that there were no gastric or intestinal symptoms. On August 8th, the fourth day after operation, her temperature and pulse became normal, and her further convalescence was uneventful. The ordinary light solid diet was allowed on the eighth day, and the wound was found to have healed by primary union. The bowels were moving regularly.

The operation having been completed and the dressings applied, the patient should be returned to bed and placed directly within the folds of a blanket and surrounded, if necessary, with hot-water bags or bottles. Care should be taken that they be not overheated, and so blister the still unconscious patient. When a quantity of saline solution

has been allowed to remain in the abdominal cavity, the patient generally leaves the operating-table in good condition, and with a warm, moist skin. When the pulse is weak and rapid, it is well to raise the foot of the bed; and when consciousness has been fully regained, to administer one-eighth grain of morphine and one one-hundredth grain of atropine subcutaneously, to quiet the patient. After this one dose, the use of morphine should be discontinued, as it deranges the digestive system and obscures the various symptoms. It is not necessary that the dorsal position should be maintained for several days, as is usually taught, as the nurse can turn him safely from time to time. During the first twelve or eighteen hours following the performance of the operation, nothing should be allowed by the mouth except a little warm water from time to time. If the demand for fluid is urgent, it can be usually successfully combated by two or three large doses of subnitrate of bismuth. During these early hours of convalescence nourishment and stimulants, if needed, should be administered by means of enemata. With the passing of these first twelve or eighteen hours, if there is no nausea or vomiting, and the pulse is about the same as before the operation, a drachm of liquid peptonoids or some other similar preparation may be given, and repeated, if well borne, every twenty minutes until four doses have been taken, when, after an interval of two hours, a small quantity of equal parts of milk and lime water, or of peptonized milk, may be given from time to time until four ounces have been taken. After this there should be an interval of two hours, and then half an ounce of liquid peptonoids may be administered. After another interval of two hours, four ounces of peptonized milk may be given. The quantity of milk should be gradually increased and the interval lengthened until the patient takes eight ounces, or its equivalent in soup, every three hours; but once during the night the interval should be lengthened to six. The general tendency is to give too small quantities of nourishment at too frequent intervals, which fatigues the stomach

and is apt to cause irritability of this organ and engender a disgust for food. During the interval, if the patient desires more liquid, egg albumen and water (the whites of three eggs to a pint of water, to which a little salt has been added) may be allowed freely.

During the first forty-eight hours after operation, if the patient is disturbed by reason of intestinal gas, great relief is often afforded by the introduction through the sphincter of a short rectal tube. On the third or fourth day, one-tenth grain of calomel and one grain of soda may be given every half hour for five hours, or until the bowels act. If they do not act, however, within three hours after all the calomel has been taken, a Seidlitz powder should be administered, and repeated after another interval of three hours. After the bowels have acted, the pulse rate should be normal, in which case the patient may be rapidly allowed to resume ordinary diet.

The dressings should be removed on the fifth day, and if the sutures are beginning to cut the tissues they should be removed and the wound supported with strips of adhesive plaster; otherwise they should be allowed to remain a few days longer. Before the sutures are removed, the wound and its surroundings should be thoroughly cleansed. The suture is then picked up on one side by means of a pair of forceps, and the skin at the angle is depressed by the flat surface of a pair of scissors, the blades of which straddle the strand of gut, which is then cut through. The object of this manœuvre is to cut the portion of suture which has been buried in the tissue, and which is therefore clean, so that in dragging the silkworm gut through the tissues and the peritoneal cavity danger of infection will be reduced to a minimum. The patient should remain in bed about eighteen days, and may then be allowed to sit up, and soon thereafter to walk about and resume his ordinary occupation.

In closing, the writer wishes again to call attention to the fact that the prognosis in operations for the conditions which have been considered in this paper depends more largely

upon whether or not the operation is performed early or late in the disease than upon any other factor.

DISCUSSION.

DR. H. O. MARCY, of Boston, said that he was glad to have an opportunity to speak a word of commendation on the thoroughness of this discussion on intestinal obstruction. This part alone would make the forthcoming volume of Transactions one of great value in a reference library. The profession was to be congratulated on the extraordinary advance that had been made in this department of surgery. It seemed but yesterday that with fear and trembling the surgeon felt his way in his effort to do something for these sufferers. Still he was of the opinion that much that had been said would be subjected to revision. The time for operating had been dwelt upon by most of the speakers in a general way, *i. e.*, the earlier, the better. The Micawber-like holding of the hands in incantations over our medicines, and waiting for that which does not occur, is the important lesson for the general practitioner in connection with this subject. If he does not feel competent to take care of such a case himself, he certainly loses nothing by asking for counsel of others; it certainly divides a very great responsibility.

With reference to the technique of the reparative process after resections of intestine, the speaker said there was much yet to learn. It was thought at first that with the plates of Senn we had nearly reached perfection, and this was repeated when Murphy presented his button to the profession. The results with this device had been good, yet no one was quite satisfied. Personally, he believed that intestinal suture would ultimately give the greatest satisfaction. Dr. Wiggin had taken a step in advance by his method of applying these sutures. Dr. Marcy said that he had done a great deal of suturing of the intestine, and in this connection he wished to call attention to a method that he had employed. A slit is made in each portion of the intestine, thus giving two straight openings and surfaces. These could be quickly brought in apposition and sutured. The small slit remaining is brought together, preferably by a double continuous suture. The result was a smooth and unabraded peritoneal surface, and every stitch was turned in. So far as his experience had gone, this method had proved entirely satisfactory. The profession had very much underestimated the importance of a thorough reconstruction of

the peritoneal planes. The abrasions left after these abdominal operations, no matter how small, were apt to give subsequent trouble. It was easy to close them with a fine running suture. He had repeatedly closed up the whole peritoneal surfaces of the pelvis, and no matter how extensive and how numerous, he believed the closing of them should not be neglected. Dr. Wiggin had spoken in detail of the closing of the abdominal wound, and of the method of taking out the sutures, yet there was really no need of taking them out. In a very large number of cases he had closed the abdominal wound by the subcuticular suture, and had found at the end of a week or ten days that the suture had come away of itself, and the aseptic wound had perfectly healed. By this method the cicatrix was reduced to a minimum—indeed, the line of union often could hardly be discerned. The same method of suturing could be used with advantage in other parts of the body.

THE USE OF CATGUT SUTURES IN VENTRO-FIXATION OF THE UTERUS.

By J. E. JANVRIN, M. D., of New York County.

Read by title, October 19, 1898.

As the title of this paper implies, my remarks will be strictly confined to the use of catgut in the fixation of the uterus to the abdominal wall in cases of hysterorrhaphy, that fixation being of a tentative character, and intended to take the place of silk or any other non-absorbable material; and since it brings before us only *one* point in the treatment of cases of ventro-fixation the paper will necessarily be very short.

I have tried pretty thoroughly the different methods which have been recommended in cases of retroflexion or retroversion, whether the displacement was a simple affair or complicated by adhesions or uterine prolapse; and in these operations I include, first, Alexander's; second, shortening of the round ligaments intra-peritoneally without fixation of the fundus to the abdominal wall; third, shortening of the round ligaments intra-peritoneally with fixation of the fundus to the abdominal wall by silk or catgut; fourth, simple fixation or suspension of the fundus by silk or catgut without shortening of the round ligaments; fifth and last, utero-vaginal fixation. In all cases in which adhesions were diagnosed before the operation, the Alexander operation was of course excluded and some other method was selected, and in these cases during the progress of the operation the adhesions were thoroughly separated and the uterus and adnexa fully liberated from their pathological attachments. From the results obtained I have come to the conclusion that in nearly every case the use of catgut for temporary suspension, associated with curettage of the endometrium, when needed, and the repair of any existing lacerations of cervix or perineum, and

the introduction of a properly adjusted retroversion pessary before the perineal sutures are twisted (to be worn for several months) will accomplish all that can be done by any or all of the other methods.

My usual method of procedure is as follows: The patient having been properly prepared, and all antiseptic precautions taken that she may be ready not only for the cæliotomy but also for any plastic work within the vagina, I proceed first to curette the endometrium, when the case demands it, and, after the curettage, having washed the uterine cavity out with a sublimate solution, one to five thousand, as cleanly as possible, and made it as dry as possible by wiping with sterilized cotton, I apply pure carbolic acid to the intra-uterine wall.

If the cervix has been previously lacerated trachælorrhaphy is done at once, silver wire being used for the sutures.

The abdominal cavity is then opened by an incision of two and a half to three inches, and any adhesions of the uterus or adnexa to the surrounding tissues are broken up without much difficulty by the index and middle fingers of one hand. Should, however, the adhesions be of such an extent that more space is needed, the abdominal incision is extended as far as necessary. It rarely becomes necessary to apply any ligatures to bleeding vessels—should any be needed I use a number two or three catgut. Ordinarily the oozing is slight, and a sterilized gauze pad pushed into the cul-de-sac behind the uterus and left there until the abdominal incision is about to be closed is sufficient. The ovaries and tubes are of course carefully examined, and should there be found any pathological condition requiring interference the proper step is taken; exsection, resection, or whatever it may be.

The uterus is then brought well forward, a No. 7 catgut, sterilized or cromicised (and I generally use the latter) is passed through its anterior wall penetrating an eighth of an inch under the peritoneum and including three fourths of an inch of uterine tissue from side to side. This suture is usually placed three fourths of an inch below the topmost point

of the fundus, each end of this suture having been threaded in a slightly curved needle prior to its introduction into the uterine wall. The needles are now passed through the abdominal peritoneum about half an inch from the cut edge, one on either side, and then through the muscle and fascia and brought out just above the fascia and at a point just above the lower end of the abdominal incision.

Silver sutures for closing the abdominal wound are then introduced. The gauze pad which had been placed behind the uterus is removed; the catgut suture drawn tightly and tied, the knot taking its position just outside of the fascia, and the uterus is thus brought up closely against the abdominal wall. The silver sutures are then twisted, the abdomen is closed, and the proper dressings applied.

If there has been a preceding laceration of the perineum, perineorrhaphy is now done, a properly adjusted retroversion pessary being applied as soon as the silver sutures are all introduced and before they are tightened. This pessary must be of such a size as to be borne without its pressing upon the perineal sutures.

The sutures are of silver and introduced upon one side of the paved surface of the vagina just taking in the edge of the mucous membrane and coming out similarly upon the other side, thus not penetrating the skin at any point.

The twisted ends of these sutures are brought out of the vagina, covered with iodoform gauze so as to prevent their cutting or irritating the restored perineum; next a small piece of the gauze is inserted within the vulva, and a self-retaining catheter introduced into the bladder. The parts are kept clean by simple irrigation of the vulva morning and night with sterilized water, beginning on the third or fourth day after the operation.

No vaginal douche is needed until about the tenth or twelfth day, and that only after the perineal (or rather vaginal) sutures have been removed. The vaginal douche is then used every second or third day for three weeks when the perineum has become strong enough to bear the introduction

of the bi-valve speculum and the sutures are readily removed from the cervix. This can be done without removing the pessary, the patient of course being placed in lithotomy position. The pessary is usually worn for a period of four or six months.

During the past four years I have operated upon some dozen cases in this manner and the results have been almost uniformly satisfactory. The object in view is the restoration of the uterus, and the avoidance of the silk suspension suture, thus running no risk of subsequent intestinal strangulation. By the time the patient is allowed to be up the catgut has done its work and is nearly absorbed, and the slight temporary adhesion of the uterus to the abdominal wall is undoubtedly absorbed during the two or three months following the operation. Thus the uterus, now restored to its normal size and weight, is kept up by the pessary.—should there be any tendency to retroversion—for the following three or four months; and by that time the ligaments, having regained their tone and assisted by the restored perineum, have sufficient strength to keep the uterus in its normal position permanently.

Exactly how much the catgut sutures accomplish it is of course difficult to say with absolute precision—but I feel confident that they hold the uterus against the abdominal parietes for at least three or four weeks—probably much longer when the cromicised suture is used—and that the slight adhesion resulting from its irritation throws out just sufficient plastic exudation to insure for a few weeks longer a slight attachment of the uterus to the parietes. This is so slight that it must necessarily be absorbed in a short time—probably within a few months—four or five at most.

The catgut has thus done its work. The uterus has returned to its normal size; and when the pessary is removed the ligaments having regained their tone, readily hold the uterus where it belongs. I have examined several cases operated upon in this way and have found a perfect result after periods varying from six months to two years.

A NOTE AS TO THE FUNCTION OF THE PNEUMOGASTRIC NERVE IN THE PRO- DUCTION OF STOMACH DISEASES.

By JULIUS POHLMAN, M. D., of Erie County.

Read by title October 19, 1898.

At the present time, when the inquiring mind is asking for causes, the question: "How long will it take before functional disturbances of the stomach produce organic lesions," deserves a fair hearing and free discussion. Diseases of the stomach are studied with the greatest care; functional disturbances are recognized everywhere; a large number of reflexes which interfere with the stomach's normal condition are well known, but their interrelation is never considered. An eminent authority in a recent course of lectures never once mentions "reflexes" as a cause in the production of stomach diseases. True, we do not know the nature of these reflexes, whether they are inhibitory or motor, secretory, sensory, or trophic; we do not know whether the vomiting of pregnancy is a motor disturbance or whether the nausea is the result of reflected reflexes; neither do we know how eye-strain acts upon the stomach, although we are well aware of the fact that it does in many cases, and can trace its possible path anatomically down the pneumogastric nerve to the stomach; but there our knowledge stops.

Cutting of a nerve has always been the simplest method of demonstrating its action upon an organ. The muscle is paralyzed when separated from its motor nerve; a paralytic secretion is the result of injury to secretory nerves; the loss of sensation is caused by the cutting of a sensory nerve; hence, when physiology and anatomy teach us that the left pneumogastric nerve is distributed to the anterior, and the right to the posterior walls of the stomach, we expect to find corresponding changes if the right or the left nerve is cut. Experiments carried on during the past four years prove something entirely different. Section of either right or left

produces in time the same definitely localized lesions in the mucous membrane. Dogs thus operated upon have been kept alive from one to four months and all exhibited the same changes, marked more or less in proportion to the time passed since the operation. The stomach always presented the following picture: A strikingly pale and softened mucous membrane in the pyloric one-third of the stomach, and a narrow band of the same appearance around the cardiac orifice, divided by a sharp and distinct line of demarcation from the rest of the healthy and normal-appearing mucous membrane.

Dr. Herbert U. Williams, professor of pathology in the medical department of the University of Buffalo, to whom I referred some of the specimens, tells me that the histologic changes were less marked than was to be expected from the macroscopic appearance, and consisted of marked œdema and nothing more. How the stomach would have looked if the animals had been kept alive one or two years, can be determined only by additional experiments. If we take it for granted that conditions similar to those produced in the dog can occur in man, and that reflexes can inhibit the action of the pneumogastric nerve on the stomach, we may consider it worth while to remember without excessive theorizing that a hyperacidity of the gastric juice is accredited as a predisposing factor in the production of gastric ulcers. Physiology has taught us that the pyloric end secretes pepsin only, and if its function is interfered with and the pepsin secretion is inhibited, the gastric juice secreted by the rest of the stomach will hold a larger proportion of hydrochloric acid. It may also be well to bear in mind that 50 per cent. of all cancer of the stomach occurs at the pyloric and from 20 to 25 per cent. at the cardiac end; in other words, from 70 to 75 per cent. of all cases of cancer are found in those parts of the stomach which are injured by prolonged inhibition of the pneumogastric nerves. The problem, "How many patients suffering from stomach diseases have or have had eye-strain?" can be solved only by the heartiest coöperation of stomach specialists and oculists.

THE PASSING OF ALCOHOL.

By JOHN M. FARRINGTON, M. D., of Broome County.

October 20, 1898.

In April, 1889, I read a paper before the Medical Society of the County of Broome, this state, entitled "The Use of Alcohol in Medicine." This paper was published in the *New York Journal of Medicine*, Sept. 28, 1889.

At that time I took the position that our text-books on *Materia Medica* and *Therapeutics* needed revision, since their statements relative to the effects of alcohol upon the human system had been proven by modern research and observation to be erroneous.

In my article I made many quotations from our standard authors, a few of which I here repeat. "Alcohol is a useful food." "An important remedy in the various forms of pulmonary phthisis."—Bartholow. "The early administration of the preparations containing alcohol furnishes our best means of counteracting the depressing action of disease in general."—Bidwell. "Alcohol is the savings bank of the tissues. He who eats little and drinks alcohol in moderation retains as much in his blood and tissues as he who eats more and drinks no alcohol."—Moleschott. "In the form of wine or distilled spirits, alcohol is the universal and familiar remedy for debility of every kind."—National Dispensatory. "In acute diseases associated with debility, alcohol is often an invaluable remedy. Taken along with food in small quantities it favors digestion by its local effect upon the stomach."—United States Dispensatory (latest edition).

These represent but a few of the quotations I copied in the paper to which I have referred, and they not only gave expression to the views of the writers at that time, and prior to

that period, but were accepted and adopted by most of the members of our profession and influenced their practice accordingly. Yet these views are no longer defensible and while I had reason to feel that I stood practically alone among my local associates, when I expressed an opinion formed from careful personal observation and experience in the use of alcohol as a medicinal agent, I am quite confident to-day the class of physicians I then represented has so far increased, that now those of the profession who believe in the general use of alcohol, as a remedy, are in the minority. With the light which has been thrown upon this subject during the past few years, a physician subjects himself to adverse criticism, and has need to apologize for using alcohol in cases in which but a few years ago he would have been censured had he refrained from using it. One of the most honored physicians of our time (N. S. Davis of Chicago) has said, "Step by step the progress of science has nullified every theory on which the physician administers alcohol. Every position taken has been disproved."

Alcohol is not a food. It does not nourish but impairs nutrition. It is not a stimulant in the proper acceptation of that term; on the contrary, it is depressant. Hence its former universal use in cases of shock was, to say the least, a grave mistake. It has been proved by recent experiments in the physiology of alcohol "that it retards, perverts and is destructive either in large or small doses, to normal cell growth and development."—Hodge. Alcohol has been dethroned from the exalted position it formerly held in therapeutics. The amount prescribed to-day relatively to population is perhaps not a tithe of what was used forty years ago when I entered upon the practice of medicine in this city of New York. And I am led to believe from published reports I have recently seen, that the administration of alcohol both in private and hospital practice is steadily and rapidly decreasing. Life insurance companies have become convinced, beyond question, that alcohol, even in moderate quantities, impairs the vital powers and shortens life. The companies

require their solicitors to question candidates for insurance more closely than ever before in reference to their habit in the use of intoxicants, and they decline to accept a risk, or accept it only with qualifications, on a party who habitually uses any form of spirituous or malt liquor. Railroad corporations have learned that even a moderate use of alcohol affects unfavorably the brain and muscular power, and therefore require all engineers, conductors, brakemen, and switchmen to be total abstainers. Religious societies who formerly made use of alcoholic wine in the celebration of the Lord's Supper have discovered that its use at the communion service has, in many instances, reawakened the appetite in reformed persons and started them again on the declivity to ruin. Churches have likewise learned that the use of alcohol as a beverage is the greatest barrier to the progress of religious truth. Therefore a majority of the Christian societies have banished intoxicating wine from their communion rites and use only the unfermented juice of the grape. Public state ceremonies, such as the inauguration of the President of the United States and of the governors of states, which were once scenes of bacchanalian revelry have been so far modified, in deference to public sentiment, that in many instances no kind of alcoholic beverage is furnished. Social gatherings and banquets, where formerly champagne and other mild intoxicants flowed freely and were considered essential, are now frequently conducted without any form of alcoholic drink.

It is our positive conviction, that notwithstanding the drinking usages of our times, there never has been a period in the history of the world when the use of alcoholic liquors, as beverages, was as disreputable as it is to-day, and no man or woman can indulge in their habitual use and not suffer depreciation in business and social position. The attention of the civilized world has been called to the conspicuous fact of the accuracy of the firing of the gunners on our battle-ships in the recent war with Spain. The contrast between the firing of the men of our navy and those of Spain was

chiefly due, no doubt, to the custom prevalent on the ships of the latter, of supplying daily rations of grog at all times, and in action or anticipation of action, double rations of grog are furnished to the men. Since 1862 that custom was abolished by our government and now no rations of liquor are allowed at any time on board our ships. The custom just alluded to as followed by Spain is true of all other navies of the world. Yet Great Britain has abandoned the double rations of grog when a fight is on, and gives no liquor, but in place of it water and oatmeal is placed about the ship to satisfy the thirst resulting from the heat, exertion, and smoke.

Perhaps the most notable evidence of the progress of enlightenment on this subject of the effects of alcohol on man has been given recently by the War Department of Great Britain.

I am indebted to the *New York Tribune* supplement May 20, 1898, for the following statements, which I have necessarily condensed when not quoting verbatim.

By order of Field Marshal Lord Wolseley, British Commander-in-chief, careful and exhaustive experiments were made with a view of ascertaining the relative effects of alcohol and of total abstinence upon the physical endurance and staying qualities of the troops. One regiment was deprived of every form of alcoholic drink; another belonging to the same brigade was allowed to purchase as usual malt liquor at the canteen, and still another received a daily ration of whiskey. In each instance the experiment showed that whereas at first the regiment which had received an allowance of grog, surpassed the others in dash, and in impetuosity of attack, after the third or fourth day its members began to show notable signs of lassitude and a lack of spirit and endurance. The same manifestations, though in a minor and slower degree, were apparent in the regiment restricted to malt liquors, whereas the men who had been kept from every form of alcoholic drink increased daily in staying power, alertness, and vigor.

The results of these experiments led the British War De-

partment to decide, not on the ground of principle, but solely for the sake of maintaining the power of endurance of the troops now engaged in the Soudan campaign, to prohibit a single drop of alcohol in camp save for hospital use.

"Spirits, wine and malt liquors have been barred from the officers' mess table, as well as from the regimental canteen, and from generals in command down to the drummer boys and the camp followers; liquid refreshments have been restricted to tea and oatmeal water."

When one remembers how devoted the Englishman is to his beer, and the Scotchman to his whiskey; that they are regarded not as luxuries, but as actual necessities of life, the boldness and likewise the difficulties of the innovation will be appreciated.

"But the scheme has fulfilled all expectations. Thanks to total abstinence, the men have been able to make forced marches of the most extraordinary character across the burning desert, under a blazing sun, the heat of whose rays can only be appreciated by those who have lived in the tropics. The Soudan is famed for a climate, which either kills or prematurely ages the majority of white folks who penetrate beyond its frontiers. Yet in spite of this, there has never been a campaign where there has been so little sickness, where so few men have been compelled to fall out even on the longest marches, and where the troops have been in such magnificent physical and moral condition that they would actually cover thirty miles of sand, and that with empty water bottles, without slaking their thirst once from the beginning to the end of the march, and at the close of which find themselves sufficiently fresh and vigorous to win a hard fought victory such as that at Atbara under Sir Herbert Kitchener."

In the line of progress Major General Miles issued July 2d his General Orders, No. 87, in which he states that "in order that it (the army) may perform its most difficult and laborious duties with the least practicable loss from sickness, the utmost care consistent with prompt and efficient service must be exercised by all, especially by officers. The history

of other armies has demonstrated that in a hot climate, abstinence from the use of intoxicating drink is essential to continued health and efficiency."

The writer will always believe, from his personal observation, that one of the most important and best planned battles of our Civil War was lost to the Union Army because of the fact that at a critical period of the engagement, the commanding general was incapacitated and unable to properly direct the movements of the troops, he being under the influence of intoxicating drink. It has been my design in this paper to state, simply and briefly, some prominent facts and some of the results of the use of alcohol rather than to enter into any elaborate or argumentative discussion of its nature. It is, alas, useless to disguise the fact that many noble members of our honored profession have been victims to the blighting influence of this agent. As our fathers in medicine and we in turn have been largely responsible for giving mankind great confidence in alcohol as a most valuable agent in the saving of life and the promotion of health, and thus have secured its most universal use throughout the civilized world, now that we have discovered our error and learned that we have been deluded in this matter, does it not become our imperative duty to arrest, so far as we may, the devastation it is causing and decry its use as evil, only evil, and that continually?

In conclusion permit me also to ask this question,—Ought we not henceforth to be leaders in all proper measures to banish from use this baneful agent which so long deceived both our fathers and ourselves, and rejoice as did the apostle Paul in the better light that has dawned upon us? Should we not be as active, yes more active, in securing the Passing of Alcohol from the domain of medicine as our ancestors and we were in conscientiously placing it there?

DISCUSSION.

DR. E. R. SQUIBB, of Kings county, said that it might be of interest in connection with the paper to learn of the work being done in the way of retiring alcohol as a menstruum for the exhausting of drugs. Considerable had been accomplished in this direction in the last two or three years. A menstruum experimented with, and one which had accomplished good results up to the present time, was acetic acid in various strengths. The different drugs had been systematically exhausted with various strengths of acetic acid, and it had been ascertained that 10 per cent. of acetic acid was almost universal in its exhaustive powers. There were now in use in veterinary practice, and in some hospitals, extracts made with acetic acid. These are made in accordance with the requirements of the pharmacopœia except that acetic acid is substituted for the alcohol. Acetic acid, when used with alkaloids, gives the physician an opportunity of prescribing other agents which formerly have been incompatible when alcohol was used as the exhausting agent. The small percentage of acetic acid left in the extract is almost unappreciable where small doses are used, and where larger doses are required the acetic acid may be neutralized with potash or soda. It was not improbable that a little acetic acid might be of benefit in certain prescriptions. The acetate of soda or acetate of potash produced by neutralizing the acetic acid was, for example, rather a benefit than otherwise in the fluid extract of buchu.

DR. H. D. DIDAMA, of Onondaga county, said that in the last number of the Journal of the American Medical Association the effect of morphine in uræmic poisoning was a subject of an article written by an Englishman. The writer stated that a great many physicians had objected to the use of morphine in uræmia, while those who had used it had testified as to its great utility. He remarked also that all who object to the use of morphine in this disease confess that they have never once tried it, and that this negative testimony could never have the same value as the positive testimony of those who had used the drug. This same sort of negative testimony was offered constantly in regard to the use of alcohol. It did not seem that the use of alcohol had passed from the profession, either socially or otherwise. There were some in the profession who formerly used alcohol in medicine but who now discard it. The testimony of those who had abandoned

its use after having given it a trial, should command much more attention than that of those who had always used it, or who had never been in a position to compare the results obtained both with and without the use of alcohol. He had himself at one time recommended the moderate use of alcohol, but he had done this because of the traditions of the profession and the recommendations of the text-books. For the last four years he had not given the equivalent of a teaspoonful of alcohol to all of his patients put together, and he was better satisfied with his results than with his previous practice with alcoholics. For this reason, some would accuse him of inconsistency, but inconsistency sometimes meant that one knew more at the present time than previously, and hence, progressive men must be at times inconsistent.

DR. WICKES WASHBURN, of New York county, said alcohol, like blood-letting, and the administration of calomel, must pass through the various changes commonly spoken of as "the swing of the pendulum." It would be better to divorce the question of alcohol as a medicine and alcohol as a beverage. We could all endorse the discontinuance of alcohol as a beverage, but, for one, he was not ready to endorse the banishment of alcohol as a medicine. Ever since he had studied Headland "On the Actions of Medicines," he had become convinced that alcohol, like morphine and opium, should be considered a narcotic. If it were not so, we would not see "dead drunks." He used alcohol in the critical stage of pneumonia, but because the second action of alcohol and morphine is that of a depressant, the subsequent dose must be given before the secondary action of the drug has time to develop. In his last forty-six cases of pneumonia he had given alcohol and morphia—morphia to the extent of a quarter of a grain every three-quarters of an hour—and had met with none of the secondary or depressing effects, or with any tendency to narcotism; nor had he found a tendency to desire morphine or alcohol after recovery. He was, therefore, firm in the conviction that hardly anything could replace alcohol.

DR. H. A. POOLER, of New York county, said that he had been in practice in New York City for many years, and at one time had been a police surgeon, so that he had had an ample opportunity to study the effects of alcohol on the human system. He wished to say distinctly, as a result of his experience, that alcohol must be used with a great deal of consideration and care. He would not exclude it from his patients under all circumstances, but he would

sooner cut off his right hand than introduce it into a young person's system. If one had for a patient an individual whose vital powers had become exhausted by the free use of alcoholics for years, it was another matter altogether. The use of alcoholics in such a subject might enable the physician to bridge over a period in a disease which might otherwise prove fatal. Sir Benjamin W. Richardson of London had been employed by the Scientific Society of Great Britain to investigate the action of alcohol upon the human system, and he had reported that it was a deadly poison from its inception to its elimination from the human system, and that it did not promote digestion, but, on the contrary, counteracted digestion. If we wish to preserve a surgical specimen, we plunge it into alcohol; just so when the human stomach is exposed to the action of alcohol, as it is, after all only a receptacle.

DR. ROBERT NEWMAN, of New York county, said that it needed a good deal of courage to speak a word for alcohol. The fault with Americans was that they did everything in a hurry. It was as much going to extremes to entirely abandon alcohol as to use it immoderately. At one time he had been engaged in making a great many autopsies for the coroner, and had had abundant opportunity to see the effects of alcohol on the human system, so that he knew them when he saw them. On the other hand, in making a post mortem examination on a man whom he had known to be drunk every day of his life for many years, he had been unable to find evidence of the deleterious effects of alcohol on the system which are so graphically described by many authors. In his own experience as a physician, he felt positive that he had succeeded in saving several lives by the use of alcohol. It was usually said that gouty individuals should not drink alcoholic liquors, yet if whiskey were not given, the health of such persons rapidly deteriorated and death occurred prematurely. Moderate doses of alcohol would do good in this class. Acetic acid in small quantities might do no harm, and hence there might be no great objection to the substitution of this acid for alcohol in the exhausting of drugs, but he knew positively that vinegar, which is dilute acetic acid, is very prejudicial to health.

DR. W. B. REID, of Oneida county, said that no one would dissent from the position taken regarding the moral effects of alcohol, but, looking at it from the standpoint of the physiologist, he would like to ask Dr. Farrington if alcohol was not a stimulant in severe cases of surgical shock.

DR. FARRINGTON, in closing the discussion, said that he thought close investigation would show that alcohol was entirely contraindicated in pneumonia. It was true that recoveries from pneumonia occur in spite of the administration of alcohol. In the first years of his practice he had poured whiskey freely into his patients, but he had gradually withdrawn it, and had come to believe that he could do better without it. Alcohol is not a stimulant ; it lashes the nervous system into activity, but causes greater depression as a result.

EYE LESIONS IN SOME DISEASES OF THE KIDNEY.

By HENRY S. OPENHEIMER, M. D., of New York County.

October 20, 1898.

In bringing before you the subject of the relation between eye and kidney, I hope to interest you by selecting a theme which comes practically into the professional experience of every one of us. And I ought to acknowledge the fact that I do it on the special advice of Dr. Gouley.

The eye shows lesions consequent upon kidney trouble in every one of its vascular tissues. I say "consequent upon kidney trouble" deliberately, because it was formerly taught that certain eye lesions preceded troubles of the kidney. It is true that the presence of the eye lesion found by the ophthalmologist is often the first thing to call the attention of the patient and his physician to the existence of trouble in the kidneys. But although a single examination for albumen may prove negative, it has been my experience that repeated and careful search for casts and albumen are sure to prove successful sooner or later. As to the frequency of the eye lesions observed in this connection, the retinitis albuminurica with or without hemorrhages is the most common, but others are seen, either alone, or in connection with the retinal lesions.

Thus we see commonly, in the nephritis of acute diseases, or in the later stages of the chronic ailment, the œdematous infiltration of the eyelids, especially of the lower ones. The loose subcutaneous cellular tissue of these parts so favors the spreading of serous exudations that we frequently see œdema here, when it cannot yet be detected in other parts. This is apt to be transient, however, until we have pitting in the malleolar region; indeed, in some cases œdema never appears in the face, although great accumulations of serum are found in the abdominal cavity, etc. The conjunctiva

may become œdematous to the point of chemosis. An extreme, and therefore rare, case of this, where the conjunctiva was elevated to the extent of leaving the cornea in a depression (chemosis) is reported by Brecht.¹ There was also detachment of the retina in this case. Hemorrhages into the conjunctiva, sometimes in advance of the retinal affection, have been seen by Talko.² Samuelson³ saw hemorrhages in both lower eyelids precede a hemorrhagic retinitis albuminurica. Wharton Jones⁴ has reported a case of extensive *bleeding into Tennon's capsule*, with protrusion of the eyeball and blindness, in disease of the kidneys with the hemorrhagic diathesis. Troubles with the extrinsic eye muscles are not rare in this connection, and a search for albumen should be made in every case of non-traumatic paresis of eye muscles, which develops rapidly and seems to be due to lesions at the base, or at the nerve roots. Finlayson⁵ cites a case of interstitial nephritis with paresis of the right abducens muscle. The autopsy revealed hemorrhages in the gray substance of the anterior portion of the cerebellum, near the median line, close to the fourth ventricle, and a third on the left posterior portion of the pons near the median line. Kines⁶ gives three cases:

1. Paresis of abducens, the only eye lesion in a case of albuminuria remaining after typhus, and existing fifteen years. It recurred several times in a few months and then the patient died; no autopsy.

2. A left-sided paresis of the trochlearis, with hemorrhages in the right optic disc, in cirrhosis of the kidney of indefinite duration. Death after six months; no autopsy.

3. A complicated ophthalmoplegia in a man twenty-four years of age. The albuminuria, a remainder of typhus contracted two years before. First, the right trochlear, then, as this improved, the internal rectus and the other muscles

¹ Arch. fur Ophthal. 2, p. 20.

² Jour. fur Aug., 1872.

³ Virch. arch. Vol. 59.

⁴ British Medical Journal, May 2, 1863.

⁵ Glasgow Medical Journal, October, 1877.

⁶ Die Bez. des Schorgans and Sci. Erkrn., p. 317.

supplied by the oculo-motorius, became lame. Later there were attacks lasting one or more days of single and double ptosis. These pareses disappeared readily. The lameness of the right internus and rectus inferior lasted longest. Fundus and internal eye muscles constantly normal. Syphilis could be positively excluded, as far as this is ever possible. The patient was lost sight of.

In most cases an extravasation about the nucleus, or root of the nerves, seems to be the cause of the paresis. In one case, however, Leber found sclerosed fibres in the nerves supplying the abducens muscle.

The *ciliary muscle*, doing the work of accommodation of the eye, shows its weakness, as a rule, almost as soon as the general condition of the patient is sufficiently affected, in the reduction of the power of accommodation of the eye. In young patients, or in those with myopic eyes, this weakness is less likely to be noticed. Older persons, however, especially those with hyperopic eyes, are sure to come to the oculist for stronger glasses to compensate for this rapidly increasing weakness. Fortunately, so long as there exists no serious lesion in the interior of the eye, this is easily accomplished. One of the less frequent eye lesions observed with kidney disease is iritis. Kuies (l. c.) reports two cases, neither of which presented anything unusual, and this seems to be the rule in the cases observed, and may explain why so few cases have been reported. I have seen but one; it was in a woman, aged sixty-seven, who, with hemorrhages in retina and albuminuria, developed a severe iritis; under the use of atropine this case developed increased tension and secondary glaucoma. Hemorrhage in the vitreous humor, either breaking its way through from the retinal vessels, or having its origin in the more peripheral capillaries, is not an unusual occurrence in these troubles. But by far the most important, as well as the most frequent, are the lesions we so commonly see in the retina, optic nerve, and choroid coat. It may seem somewhat heterodox to associate the choroid with the retina in this connection, but I am well

satisfied that in the severer processes the choroid is implicated in affections of the retina. There are two reasons why the choroiditis in this connection is rarely mentioned: first, the retino-choroidal pigment hides, in a great measure, the process in the choroid coat; secondly, the exudation in the retina itself prevents the lesion of the choroid from being seen. But in the greater number of reports of anatomical and microscopical examinations of such eyes my statements are borne out.

Retinitis albuminurica, or neuro-retinitis albuminurica, for the optic nerve is very often more or less involved in some stage of the process, is so well known that I hesitate to describe it. When fairly pronounced, we find its characteristic whitish points, in a more or less complete stellate form, arrayed around the macula; the retina hazy, or whitish, over the central part of the fundus, involving specially the region of the macula and nerve. The vessels, perhaps, partially covered with the exudation and the veins larger than normal. Hemorrhages, associated with this ophthalmoscopic picture, are the rule rather than the exception. They may be few, or very numerous. They are mostly flame shaped or striped; taking these shapes when in the nerve fibre layer, as is commonly the case; they may occupy other layers of the retina, and then take more or less circular forms. In the beginning the trouble may be limited to a slight haziness of the retina in the central portion of the fundus, with a lessening of the light streak upon the vessels within the affected area and perhaps the outlines of the optic disc a little indistinct or washed out. This may increase until, in the severer neuritis, we have an appearance resembling choke-disc. The white spots appear gradually, and not always in the typical stellate arrangement. They may coalesce and thus cover a good part of the region occupied with its vessels. The fovea centralis in such cases appears as a bright red spot in the centre of this white, or red white, field. The periphery of the eye usually remains free, and this explains the fact that the patients are seldom completely blind. The vision is, of

course, reduced according to the severity and extent of the exudation.

As a rule this affection is binocular, although many cases have been observed in one eye only. Sooner or later, however, the second eye is apt to show the lesion. The course of this disease depends upon that of the kidney trouble.

In acute cases, arising from the exanthemata, or from pregnancy, we see quite a proportion of complete recoveries, but some cases go on from bad to worse. The prognosis is most serious when hemorrhages are present, as we can assume a similar condition to exist in the vessels in the brain. When the causal factor is removed the blood becomes gradually absorbed, leaving perhaps some pigmentation. The whitish exudation disappears very gradually, and completely only in cases in which the kidneys assume normal conditions and functions. In 1886, Dr. Bull reported to the American Ophthalmological Society statistics of 103 cases observed by him. Of these eighty-six were fatal; fifty-seven died in the first year, eighteen in the second, six in the third, four in the fourth, and one in the sixth year. In four of these cases sugar as well as albumen was found in urine; of these four, two died in eight months, and one in fourteen months. Thus it appears that over half die the first year, and about three-fourths the second (73.25 per cent.). The ages ranged from five to seventy-eight years. In the progress of this inflammation there may be some temporary improvement; at times this can be made out with the ophthalmoscope, and at others not. There may be new spots of exudation or hemorrhage and some may disappear. The retina may become folded and even detached. Herter (in *Charité Annual*, 1877) reports a double retinitis with detachment in a woman eight months pregnant. Anderson (in *Johrb. für Aug.* 1888) detachment of the retina in a child with chronic nephritis. Hirschberg (*ibid.* 1884) double detachment in a man of twenty-two, with retinitis albuminurica. These detachments seem to occur more readily in pregnant women than in others, but tend toward recovery at the end of pregnancy. Cases of permanent blindness are reported (Fürst

Berl. Klin. Woch. 1887), several even after kidneys had healed. Weeks (one) (Arch. f. Aug. 1887).

T. Teillaris (Annal de Oculistique 1886) cites four cases of retinal hemorrhage of pregnancy, all of which recovered after pregnancy; one of these was complicated by nose-bleeding and hæmoptysis. As to the *anatomical condition* of retinitis albuminurica we have primarily changes in the blood vessels. The lumen of the smallest arteries and capillaries is narrowed through thickening of their walls, particularly of the interna. This sometimes leads to thrombosis, and complete closure of the vessel. This can be easily made out and studied with the ophthalmoscope. But the condition extends to every muscular tissue of the eyes. Hemorrhages occur through the veins and capillaries mostly. The œdema around these foci leads to the lifting and folding of the retina, before mentioned. The white spots seen with the ophthalmoscope are shown to be fatty degeneration of the tissues and exudations. Some authorities find exudations which they describe as lardaceous, colloid or amyloid, but so far as I know the characteristic chemical reaction of amyloid tissues has never been obtained.

Excepting in severe cases, the layer of rods and cones, and the pigmented epithelium, are not involved. The *essential nature of this process* appears to me to be consequent upon the changes in the blood vessels, brought about by an irritant to the tunica intima which exists in the blood, whether this be urea, or some substance of imperfect elimination, or any other poison, as of scarlatina, malaria, diphtheria, syphilis, lead, mercury, phosphorus, or alcohol, etc. This irritant causes contraction of the arterioles and capillaries, which in turn produces thickening of the coats of the vessels, lessens their calibre, and throwing more work upon the left heart, produces the hypertrophy of the left ventricle so constantly associated with chronic kidney disease. Now then we have a vitiated blood, increased arterial tension, diseased blood vessels, and a hypertrophied left heart. The condition affects the kidneys as well as the rest of the system. In the

retina and the cortex of the brain, etc., we have terminal arteries, and therefore here, for lack of anastomoses to supply the deficiency of circulation as in other parts of the body, we are apt to have disturbances of nutrition and necrobiosis. In the retina and locus minima resistentia is the region of the macula where fatty degeneration in the nerve-fibre layer, from imperfect nutrition, produces the typical stellate white figure seen ophthalmoscopically. The condition of the blood, the vessels, and the *vis a tergo* will determine whether we shall have hemorrhages at the beginning or later. Hypertrophy of the heart alone is, in my opinion, not sufficient to explain, as has been formerly attempted, their occurrence.

Thus to recapitulate, we have seen occur, from insufficient or vitiated blood supply, or from hemorrhages due to disease of the smaller vessels, œdema of the lids and *conjunctivæ*, hemorrhage into the conjunctiva, into the capsule of Tenon, into the vitreous, the orbital tissues, and the eye muscles, or their supplying nerves or trophic centres, inflammation of the iris, retina, and choroid, with *hemorrhages* into any and all of these, as well as into the vitreous. These conditions also extending to or sometimes beginning in the optic nerve. And all these lesions can be explained, as stated before, through the study of the circulatory system: the changed quality of the blood, the changed walls and calibre of the blood vessels, and the hypertrophy of the left ventricle. The treatment of these eye troubles consists in the proper treatment of the kidney trouble. Sometimes the oculist is called upon to use a mydriatic, a counterirritant; or perhaps massage and electricity of a lame eye muscle; but generally the family physician treats eye patients of the types discussed here.

Finally we will consider the most serious disturbance of vision connected with renal trouble—uræmic amaurosis. It is an amblyopia developing in the course of acute nephritis coming on gradually, or, as in most cases, rapidly. We see it most frequently in the nephritis of the exanthemata, and of pregnancy. When it occurs in chronic nephritis, it is during an acute exacerbation, and warrants a grave prognosis. It is

usually accompanied by headaches, nausea, and vomiting, and may occur during uræmic convulsions. The pulse is hard, arterial tension great. Urine loaded with albumen. There may be complete unconsciousness, and on recovery blindness. Or while the mind is perfectly clear, blindness may come on rapidly, and most often become absolute. As a rule the pupils are dilated, but they may be contracted, their characteristic being that although the patient be wholly insensible, they usually react to light, and this even where the patient is unconscious. In exceptional cases, where there is no reaction, there have been inflammations of the optic nerves which account for its absence. This condition is always binocular. There may be retinitis with this amblyopia, but in such cases it has existed before the amaurosis, and continues after this has subsided, and has no influence upon it. In uncomplicated uræmic amaurosis there is usually no ophthalmoscopic change to be noticed. In a few reported cases narrowing of the arteries has been seen with the mirror, showing arterial spasm. The prognosis depends upon the condition of the kidneys. The patient may die in the uræmic attack. If they recover from this, the vision usually returns in 12 to 72 hours. The condition is clearly one of poisoning of the nerve centers, with the production of arterial spasm, a consequent cerebral anæmia, and perhaps serous exudations. The reaction of the pupils to light proves the blindness to be of central origin. As to the frequency of uræmic amblyopia, I know of no statistics so conclusive as Dr. Bull's, who observed (*l. c.*) it in 37 out of the 103 cases referred to above. The differential diagnosis between retinitis albuminurica and this amblyopia is so easy as to hardly need mention. The former comes on gradually, permits the patient to go about in reasonable comfort, and presents distinct retinal lesions. In this amblyopia the patient is found in bed, having suddenly become more or less completely blind, with cerebral symptoms more or less pronounced, even to coma, and as a rule no lesion appreciable to ophthalmoscopic examination.

SOME OBSERVATIONS OF GENERAL INTEREST REGARDING THE COURSE AND MAN- AGEMENT OF CATARACT.

By J. H. WOODWARD, M. D., of New York County.

October 20, 1898.

It would be presuming to suppose I could direct your attention to anything either original or new respecting the subject which I have chosen for discussion. The world is full of ophthalmologists whose opportunities for original work far surpass my own, and whose ability to profit by their opportunities is beyond comparison. With their contributions to medical thought you are all familiar, and for me to attempt to add anything worthy of record to the voluminous literature of cataract, may prove an impossible task. Nevertheless, I shall hope to interest you for a few moments by bringing to your notice a phase of the development of senile cataract which is generally unknown, or, at least, overlooked.

1. THE NATURAL DEVELOPMENT OF SENILE CATARACT.

If you study the published opinions of the important authorities upon cataract, or if you recall to mind the results of consultations with eminent ophthalmologists upon cases of incipient senile cataract, I think you will admit the impression you have received is, first of all, that senile cataract is a progressive disease, and that within a reasonable time all cases must come to operation. No doubt, too, some of you have been disappointed in the length of time consumed in the development of the disease, but if you have halted there, if you have not gone further and condemned as unreliable the opinion received from ophthalmologists, you have exer-

cised great self-control. In your impatience, you may have prescribed remedies that are recommended as absorbents of cataract, and you may have been told by some of your patients that their sight has been helped by the treatment. Others of your acquaintance may have entered one of the various institutions where cataracts are said to be absorbed, and have assured you afterward that their vision had been improved. Now in the absence of positive objective evidence to the contrary, I do not know why the testimony given by such patients is not as reliable as any testimony based upon subjective impressions. The world at large surely maintains this view and, if we medical men do not believe such treatment to be helpful, we ought to have a sufficient reason for our opinion. It is not enough to assert that the absorptionists are quacks; or that it is impossible to clarify an opacity in the crystalline lens by medicines, by mechanical means, or by electrical appliances. Some patients will tell us they certainly enjoy better vision after such treatment, and that is enough for them, for every afflicted person wants results that redound to his comfort, and it matters little to him how they may have been achieved.

When a person has been told that he has a cataract and that before his sight may be any clearer, it must be more obscured; he must be patient a year or so, after which he may be operated upon, and have his sight restored; and when such a person after years of anxious waiting, finds that his vision is as good, if not better than it was when the advice was given him, what wonder is it if he either doubts the accuracy of the diagnosis, or questions the advisability of letting nature do with his sight as pleases her best.

In view of these things, it seems to me that medical men in general, as well as ophthalmologists in particular, should know what may be the natural course of a senile cataract, for it is only by virtue of our knowledge of that phase of any malady that we can measure the effect which treatment may have had upon it. The period of greatest anxiety and apprehension for patients who are afflicted with senile

cataract is during its incipient stage. By the time the function of the eye is seriously impaired, most of them have become reconciled, in a surprising degree, to their condition. There is no longer room for the imagination to deceive; their case has become tangible, and the remedy is well known. It is evident that the critical period is that of the incipency of the cataract; for then both patient and physician are most easily led astray by the false hopes engendered by variations in the functional strength of the affected organ and by the alluring promises of deluded therapeutists. The records of the cases which I shall present to you were made in the ordinary course of private work, without any thought of the use I am making of them now. I am convinced that they are not at all exceptional, but that the record books of any careful ophthalmologist will reveal the same truths I wish to emphasize at this time. From the evidence which I shall lay before you, I think you will be able to make the following deductions:

1. Many cases demonstrate that, in the natural course of senile cataract, there is not a progressive loss of vision.

2. That *improvement* of vision in such cases is often observed.

3. That complete cataractous degeneration of the senile type is a process often requiring many years for its consummation.

In none of the cases were there any pathological changes within the eyeball other than those of the crystalline lens. The patients all came to my office in the ordinary course of business. So far as I was able to discover, no constitutional or local maladies existed to impair the value of these cases for the purposes of this argument.

PATIENTS BETWEEN THIRTY AND FORTY YEARS OF AGE.

CASE I. — Mrs. H. A. S., aged about thirty, complains of great pains in her eyes and indistinctness of vision, during the past ten months. She wore glasses for a while five years ago. Patient has a nervous temperament, is energetic and ambitious.

Aug. 5, 1891. Right eye shows incipient senile cataract; otherwise, media clear and fundus normal; left eye shows media clear and fundus normal. R. V. = $\frac{6}{60}$; L. V. = $\frac{6}{20}$.

Aug. 7, 1891. R. V. = $\frac{6}{50}$ refraction corrected, V. = $\frac{6}{15}$; L. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{10}$.

Aug. 11, 1891. R. refraction corrected, V. = $\frac{6}{15}$. L. refraction corrected, V. = $\frac{6}{15}$. Ordered glasses, to be worn constantly.

Aug. 27, 1892. During the winter she used her eyes for fine work, and now has a return of the pains. Is unable to read. Incipient senile cataract in R. E. R. V. = $\frac{6}{50}$ refraction corrected, V. = $\frac{6}{15}$. L. V. = $\frac{6}{50}$ refraction corrected, V. = $\frac{6}{15}$.

July 31, 1895. During the past six months she has not been able to see clearly at a distance. The cataract in her R. E. is slightly more marked than before. The media are clear and the fundus normal in her L. E. R. V. = $\frac{6}{50}$ refraction corrected, V. = $\frac{6}{15} +$. L. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{9} -$.

Sept. 2, 1898. Has been working hard with microscope; her eyes are painful again. Intense photophobia. Has been troubled with insomnia all summer. Has tried rest, tonics, and change of scene without deriving any benefit. The cataract in her R. E. is more marked. Incipient senile cataract discovered in her L. E.

Sept. 8, 1898. R. V. = $\frac{4}{60}$ refraction corrected, V. = $\frac{6}{15} +$. L. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{12} +$. R. V. = $\frac{4}{60}$ with lenses worn since 1895, V. = $\frac{6}{15}$. L. V. = $\frac{6}{20}$ with lenses worn since 1895, V. = $\frac{6}{12} +$. Comment: Patient was under observation *seven* years. Vision of cataractous eye in 1891, the refraction having been corrected, was $\frac{6}{15}$. Vision of the same eye in 1898, the refraction having been corrected, was equally good, *i.e.*, $\frac{6}{15}$. The pain, photophobia, and insomnia were in no sense due to changes in her crystalline lenses, but to over-use of the eyes at fine work and to general irritability of her nervous system.

PATIENTS BETWEEN FORTY AND FIFTY YEARS OF AGE.

CASE II. — Mrs. N. F. D., aged forty-nine, complains of asthenopia; a strong, well-nourished woman; nervous temperament, very energetic.

Aug. 16, 1887. Incipient senile cataract in each eye, seen when patient looks directly downward, downward and inward, or downward and outward. Otherwise, media are clear and fundi normal.

NOTE. — V. stands for vision. The fractions indicate approximation of the acuteness of vision to normal sight, which is represented by the fraction $\frac{6}{6}$.

R. V. = $\frac{6}{30}$ refraction corrected, V. = $\frac{6}{6}$. L. V. = $\frac{6}{30}$ refraction corrected, V. = $\frac{6}{6}$. Ordered glasses for constant wear, and also for reading.

Nov., 1887. R. V. = $\frac{6}{30}$ refraction corrected, V. = $\frac{6}{6}$. L. V. = 30 refraction corrected, V. = $\frac{6}{6}$.



March 9, 1892. Cataracts are more marked. R. V. = $\frac{6}{50}$ refraction corrected, V. = $\frac{6}{6}$. L. V. = $\frac{6}{60}$ refraction corrected, V. = $\frac{6}{6}$.

Jan. 3, 1893. Cataracts are developing slowly, changed reading-glasses.

Oct. 16, 1895. R. V. = $\frac{4}{60}$ with lenses prescribed in 1892, V. = $\frac{6}{12}$. L. V. = $\frac{4}{60}$ with lenses prescribed in 1892, V. = $\frac{6}{9}$. Her reading-glasses are satisfactory.

Jan., 1898. Did not examine her eyes, but she told me that the cataracts were not troubling her yet. Her health was very poor, but she was able to read and sew as much as her general condition would permit. Comment: Patient was under observation *eleven* years. During the first five years, with correcting lenses her vision was normal, *i.e.*, $\frac{6}{6}$ in each eye. In 1892 her vision with glasses was $\frac{6}{6}$ in each eye. In 1895 with the same glasses the vision of her R. E. was $\frac{6}{12}$, and that of her L. E. was $\frac{6}{9}$ —.

CASE III. — Miss J. P., aged forty-nine, complains of indistinctness of vision. Was fitted with glasses by Dr. W. O. Moore in 1888, who, she says, told her that there were “dark lines” in her eyes. Incipient senile cataract in each eye.

Oct. 20, 1891. R. V. = $\frac{6}{30}$ refraction corrected, V. = $\frac{6}{9}$. L. V. = $\frac{6}{60}$ refraction corrected, V. = $\frac{6}{12}$. Ordered lenses for distant vision and for reading.

June 1, 1897. R. V. = $\frac{6}{30}$ refraction corrected, V. = $\frac{6}{12}$. L. V. = $\frac{6}{30}$ refraction corrected, V. = $\frac{6}{9}$. Changed reading-lenses, making them weaker than before. Comment: Cataracts developing slowly. Patient under observation *six* years, at the end of which period her vision was as good as at the beginning. That the refraction of the crystalline lenses was changing is shown by the fact that weaker reading-lenses were required in 1897.

Oct. 18, 1898. R. V. = $\frac{6}{30}$, L. V. = $\frac{6}{30}$, refraction corrected, V. = $\frac{6}{12}$, in each. Used "Leman Cataract Cure" in summer 1897. Is myopic, reads, without glasses, Jaeger No. 5 with each eye. With + lenses, reads Jaeger No. 1 with ease. Cataract slowly developing.



PATIENTS BETWEEN FIFTY AND SIXTY YEARS OF AGE.

CASE IV. — Mrs. E. H. C., aged fifty-eight. Vision has never been very good; complains of asthenopia in reading. Health, vigorous. She is an energetic woman, not nervous.

Oct. 15, 1890. R. V. = $\frac{3}{50}$ refraction corrected, V. = $\frac{6}{15}$. L. V. = $\frac{6}{15}$ refraction corrected, V. = $\frac{6}{10}$.

Oct. 20, 1890. R. V. = $\frac{3}{50}$ refraction corrected, V. = $\frac{6}{15}$. L. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{15}$ +. Ordered reading-glasses, which were never very satisfactory.

Oct. 29, 1891. Incipient senile cataract in centre of each lens discovered. Changed reading-glasses. No further record made.

July 2, 1896. Incipient senile cataract in equator and in centre of each lens. R. V. = $\frac{6}{50}$ refraction corrected, V. = $\frac{6}{12}$. L. V. = $\frac{6}{12}$ refraction corrected, V. = $\frac{6}{12}$. Ordered change of reading-glasses.

Aug., 1898. She has no more trouble with her eyes than usual. The glasses are as satisfactory now as any have ever been. No examination of her eyes made. Comment: Patient has been under observation for her eyes *six* years. The best attainable vision for her in 1890, with glasses, was R. E. $\frac{6}{15}$ and L. E. $\frac{6}{10}$; at that time the media was clear and the fundi normal. In 1896, after both eyes had shown incipient nuclear cataract for five years, her best attainable vision with glasses was R. E. $\frac{6}{12}$, L. E. $\frac{6}{12}$, which vision for distance, without glasses, for each eye was superior to that of 1890,

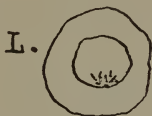
and notwithstanding the fact that not only the nucleus but also the cortex of each lens had already become cataractous before the observation was made in 1896.

CASE V. — Rev. L. H. E., aged fifty-four.

Nov. 11, 1889. Complains of asthenopia in reading; is a very vigorous man. R. V. = $\frac{6}{9}$ refraction corrected, V. = $\frac{6}{6}$. L. V. = $\frac{6}{12}$ refraction corrected, V. = $\frac{6}{6}$. Ordered reading-lenses.

Aug. 13, 1894. R. E. media clear and fundus normal. L. E. incipient senile cataract; otherwise, media clear and fundus normal. R. V. = $\frac{6}{15}$ refraction corrected, V. = $\frac{6}{6}$. L. V. = $\frac{6}{15}$ refraction corrected, V. = $\frac{6}{12}$. Changed reading-glasses.

June 28, 1898. R. V. = $\frac{6}{12}$ refraction corrected, V. = $\frac{6}{6}$. L. V. = $\frac{6}{15}$ refraction corrected, V. = $\frac{6}{12}$. Can see to read better with R. E. (Jaeger No. 1) than with L. E. (Jaeger No. 3) with reading-lenses. R. E. media clear and fundus normal. L. E. incipient senile cataract.



Comment: Patient was under observation for *nine* years. Four years ago an incipient senile cataract was discovered in his left eye. In 1898 the vision of that eye for distance was the same as that recorded for it in 1894.

CASE VI.—Mrs. B. L. G., aged fifty-nine. Vision indistinct. Incipient senile cataract in each eye, more advanced in R. E. than in L. E.

Jan. 15, 1891. R. V. = $\frac{3}{50}$ refraction corrected, V. = $\frac{6}{20}$. L. V. = $\frac{3}{50}$ refraction corrected, V. = $\frac{6}{10}$. Ordered glasses.

Oct. 24, 1893. R. refraction corrected, V. = $\frac{6}{15}$ +. L. refraction corrected, V. = $\frac{6}{9}$. Cataracts developing slowly. Changed reading lenses.

Aug. 3, 1895. R. refraction corrected, V. = $\frac{6}{20}$. L. refraction corrected, V. = $\frac{6}{9}$ —. Comment: Patient was under observation *four* years, at the end of which period her vision was as good as at the beginning.

CASE VII.—Mrs. D. C. S., aged fifty-five to fifty-nine(?) Vision indistinct, is wearing concave lenses fitted by a jeweler. Incipient senile cataract in each eye.

Mar. 7, 1890. R. V. = $\frac{3}{60}$ refraction corrected, V. = $\frac{6}{16}$. L. V. = $\frac{3}{60}$ refraction corrected, V. = $\frac{6}{10}$.

July 14, 1898. Of late window frames look curved. Incipient senile cataract in each eye, otherwise media clear and fundus normal. R. V. = $\frac{3}{60}$ refraction corrected, V. = $\frac{6}{12}+$. L. V. = $\frac{3}{60}$



refraction corrected, V. = $\frac{6}{20}$. R. E. without lenses reads Jæger No. 2. L. E. without lenses reads Jæger No. 9. Comment: Patient under observation *eight* years. She told me she had not consulted any one for her eyes since her visit to me in 1890. She came again because the glasses she had worn for eight years were no longer satisfactory. Reading vision of L. E. was not as good as that of R. E., notwithstanding the apparent further development of the cataract in the former.

CASE VIII.—Mrs. S. L. W., aged fifty-seven, has worn glasses and has been treated by the Stevens method for general nervous symptoms; she now complains of asthenopia. She is a person of marked neurotic temperament.

May 21, 1891. R. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{10}$. L. V. = $\frac{6}{50}$ refraction corrected, V. = $\frac{6}{10}$. Ordered lenses for distance and for reading.

June 14, 1893. Incipient senile cataract discovered in each eye. Patient is very nervous owing to a recent fracture at the hip joint. R. refraction corrected, V. = $\frac{6}{10}$. L. refraction corrected, V. = $\frac{6}{10}$.

Apr. 28, 1894. R. refraction corrected, V. = $\frac{6}{6}$. L. refraction corrected, V. = $\frac{6}{6}$. Changed her glasses.

Sept. 11, 1897. R. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{6}$. L. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{6}$. Comment: Patient was under observation *six* years. Cataractous degeneration in each eye discovered four years ago. Vision not affected by the changes in her crystalline lenses.

CASE IX.—Mr. T. B. C., aged fifty-four. Asthenopia in reading during the past four or five months. Eyes burn and feel uncomfortable much of the time. General health good. R. E. media

clear and fundus normal. L. E. incipient senile cataract; fundus easily seen and is normal.

L.



July 27, 1889. R. V. = $\frac{6}{16}$ refraction corrected, V. = $\frac{6}{6}$. L. V. = $\frac{6}{12}$ refraction corrected, V. = $\frac{6}{6}$. Ordered glasses for distance and for reading.

Apr. 3, 1890. R. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{6}$. L. V. = $\frac{6}{20}$ not improved.

May 30, 1890. R. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{10}$. L. V. refraction corrected, V. = $\frac{6}{10}$. Changed his glasses.

June 6, 1892. R. V. = $\frac{6}{15}$. L. V. = $\frac{6}{15}$. Cataract in L. E. is more advanced.

Feb. 13, 1897. R. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{9}$. L. V. = $\frac{6}{15}$ — not improved. Ordered reading and distance glasses. Comment: Patient was under observation *eight* years. In 1889 vision of his cataractous eye was, without glasses, $\frac{6}{12}$, and with glasses it was $\frac{6}{6}$. In 1897 the vision of that eye had fallen to $\frac{6}{15}$ —, and was not improved by glasses.

PATIENTS BETWEEN SIXTY AND SEVENTY YEARS OF AGE.

CASE X. Mrs. C. C. N., aged sixty-three. General health is never very good.

June 4, 1889. Large infected ulcer of left cornea.

Aug. 27, 1889. R. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{6}$ —. L. V. = $\frac{3}{60}$ nebula of cornea. Ordered reading-lenses.

Oct. 31, 1893. Incipient senile cataract discovered in R. E. Changed reading-lenses.

June 20, 1898. R. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{9}$ —. L. V. = $\frac{1}{20}$ not improved. Cataract in R. E. developing slowly. Reads Jaeger No. 1 with lenses. Comment: Patient was under observation for *nine* years. Five years ago, in 1893, an incipient senile cataract was discovered in her R. E. Prior to that time, in 1889, the vision of her R. E. was $\frac{6}{20}$, and with the correcting-lens it was $\frac{6}{6}$ —. In June, 1898, her vision was practically the same, *i.e.*, R. V. = $\frac{6}{20}$; with glass, V. = $\frac{6}{9}$ —.

CASE XI. — Mrs. M. L. S., aged sixty-one. Very feeble in health. Complains of smarting and burning of her eyelids, due

to chronic catarrhal conjunctivitis, for which she comes for treatment.

Feb. 6, 1890. R. V. = $\frac{2}{60}$. L. V. = $\frac{6}{20}$.

Oct. 13, 1890. Incipient senile cataract in each eye. R. V. = $\frac{2}{60}$. L. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{10}$ —.



June 26, 1895. R. V. = $\frac{3}{60}$. L. V. = $\frac{6}{20}$ not improved. Cataract slowly developing. Reads R. E. with lens, Jaeger No. 4. Reads L. E. with lens, Jaeger No. 2. Comment: Patient was under observation *five* years, at the end of which time her vision was as good as at the beginning.

CASE XII. — Mr. Z. C., aged sixty-two.

Dec. 22, 1887. Asthenopia when he reads at night. Very strong and vigorous. Incipient cataract in each eye: so-called arcus senilis lentis. In figs. pupils are supposed to be fully dilated. Ordered reading-lenses.



Dec. 11, 1890. R. V. = $\frac{6}{60}$ refraction corrected, V. = $\frac{6}{9}$. L. V. = $\frac{6}{60}$ refraction corrected, V. = $\frac{6}{9}$. Fundus not perfectly distinct.

March 26, 1891. R. V. = $\frac{6}{60}$ refraction corrected, V. = $\frac{6}{9}$. L. V. = $\frac{6}{60}$ refraction corrected, V. = $\frac{6}{9}$. Ordered glasses for distance as well as for reading.

May 16, 1895. R. V. = $\frac{6}{60}$ refraction corrected, V. = $\frac{6}{9}$. L. V. = $\frac{6}{60}$ refraction corrected, V. = $\frac{6}{6}$ —.

June 23, 1897. R. V. = $\frac{2}{60}$ refraction corrected, V. = $\frac{6}{12}$ +. L. V. = $\frac{6}{60}$ refraction corrected, V. = $\frac{6}{12}$ +. Pain in his head and vertigo for past two months. Arterial tension high.

Sept., 1898. Died. Comment: This is the only case in the series that ever showed any constitutional disease that might have affected his vision. During the last years of his life, his cerebral blood vessels became atheromatous; the power of accommodation

was considerably weakened by his cerebral affection during the last year or two of his life. He was under observation *eleven* years. He never had any attack that resembled an apoplectic seizure.

CASE XIII. — Miss S. L. P., aged sixty-five. Not a strong person; incipient senile cataract in each eye, more advanced in L. E.

March 5, 1891. R. V. = $\frac{6}{60}$. L. V. = $\frac{6}{60}$.

May 27, 1891. R. V. = $\frac{6}{60}$. L. V. = $\frac{6}{60}$ —. Cataract in each eye, *i.e.*, ready for operation in one year, perhaps.

Apr. 10, 1895. R. V. = $\frac{5}{60}$ refraction corrected, V. = $\frac{6}{9}$ —. L. V. = $\frac{6}{60}$ refraction corrected, V. = $\frac{6}{15}$.

May 28, 1896. R. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{15}$. L. refraction corrected, V. = $\frac{6}{12}$.

Dec. 9, 1897. R. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{12}$ +. L. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{15}$ +. With correcting lens reads Jæger No. 1 slowly with each eye.

July 7, 1898. R. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{9}$ —. L. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{15}$. Reads Jæger No. 1 with each

R.



eye with correcting lenses. Comment: Patient was under observation *seven* years, at the end of which period his vision was quite as good as at the beginning.

CASE XIV. — Mrs. H. S. H., aged sixty-seven, complains of indistinctness of vision, as though there were a veil over her sight. She has been annoyed in this way five or six months. Incipient senile cataract in each eye.

Oct. 2, 1891. R. V. = $\frac{6}{60}$ refraction corrected, V. = $\frac{6}{9}$. L. V. = $\frac{6}{60}$ refraction corrected, V. = $\frac{6}{12}$.

Jan. 31, 1893. R. V. = $\frac{6}{12}$ refraction corrected, V. = $\frac{6}{15}$. L. V. = $\frac{6}{30}$ refraction corrected, V. = $\frac{6}{15}$. *Patient thinks that her right eye has improved since the last visit.* Comment: Patient was under observation *two* years. The case is utilized because of her comments upon her R. E., the vision of which had really deteriorated, notwithstanding the fact that without glasses the vision for distance had changed from $\frac{6}{60}$ to $\frac{6}{12}$.

CASE XV.—Mrs. E. S. B., aged 64. Chronic catarrhal conjunctivitis in each eye. Incipient senile cataract in each eye.

June 20, 1894. R. V. = $\frac{3}{60}$. L. V. = $\frac{3}{60}$. Reads Jæger No. 2 with correcting lenses.

April 6, 1896. R. V. = $\frac{5}{60}$. L. V. = $\frac{6}{60}$. Cataracts have developed since last visit. With correcting lenses reads Jæger No. 2. Comment: Patient was under observation *two* years, during which period her vision for distance doubled and her reading vision remained the same.

CASE XVI.—Mr. C. H. M., aged sixty-four, noticed some time since that the sight of his left eye was failing. General health is excellent. R. E. shows incipient senile cataract, downward and inward. R. E. shows incipient senile cataract covering a large portion of the posterior arm of the lens.

Dec. 26, 1893. R. V. = $\frac{6}{12}$. L. V. = $\frac{6}{30}$.

Aug. 3, 1895. Cataract in R. E. has not advanced much since last visit. Cataract in L. E. is complete. R. +. = $\frac{6}{15}$ —. L. V. = perception of light.

Nov. 13, 1897. R. V. = $\frac{6}{20}$ +. Simple extraction of cataract from L. E.

Dec. 30, 1897. Discission of capsule L. E.

April 9, 1898. R. V. = $\frac{6}{30}$ refraction corrected, V. = $\frac{6}{9}$ +. L. V. = $\frac{1}{120}$ refraction corrected, V. = $\frac{6}{6}$. Reads with correcting lenses Jæger No. 1, with each eye. Comment: Patient was under observation *five* years. The cataract in L. E. ripened by the end of the second year after it was diagnosed. The cataract in his R. E. had not made it impossible to give him nearly normal vision with glasses at the end of five years.

CASE XVII.—Mr. H. J., age not recorded. Incipient senile cataract in each eye.

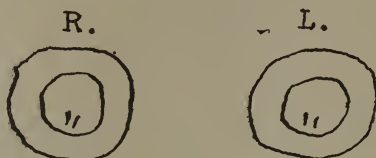
Feb. 13, 1891. R. V. = $\frac{6}{50}$, with his glasses V. = $\frac{6}{15}$. L. V. = $\frac{6}{30}$, with his glasses V. = $\frac{6}{6}$.

Aug. 26, 1897. Cannot see to read with his glasses. R. V. = $\frac{6}{60}$ refraction corrected, V. = $\frac{6}{15}$. L. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{12}$.

Sept. 2, 1897. R. V. = $\frac{6}{60}$ refraction corrected, V. = $\frac{6}{15}$. L. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{15}$. Ordered reading lenses. Comment: Patient was under observation *six* years; at the end of that period his vision had changed very little.

PATIENTS BETWEEN SEVENTY AND EIGHTY YEARS OF AGE.

CASE XVIII.—Mrs. T., aged seventy-three. Incipient senile cataract in the lower segment of each lens; otherwise media are clear and fundus normal in each.



Feb. 1, 1888. R. V. = $\frac{6}{30}$ refraction corrected, V. = $\frac{6}{6}$. L. V. = $\frac{6}{30}$ refraction corrected, V. = $\frac{6}{6}$. Ordered glasses.

September, 1898. This patient has been reading and sewing as much as she has wished since 1888. No further treatment of her eyes has been necessary. Her general health has been good all the time.

CASE XIX.—Rev. F. W. O., aged seventy-eight. General health excellent, except for facial neuralgia, which has troubled him since 1871.

Dec. 24, 1888. Incipient senile cataract in each eye. R. V. = $\frac{6}{30}$ refraction corrected, V. = $\frac{6}{12}$. L. V. = $\frac{6}{30}$ refraction corrected, V. = $\frac{6}{12}$.



March 18, 1889. R. V. = $\frac{6}{30}$ refraction corrected, V. = $\frac{6}{6}$. L. V. = $\frac{6}{30}$ refraction corrected, V. = $\frac{6}{12}$. Reading lenses ordered later.



January, 1897, he died; his eyes had never required any further treatment.

CASE XX.—Mr. S. S. T., aged seventy. Chronic catarrhal conjunctivitis in each eye. Incipient senile cataract in each eye.

R.



L.



Dec. 1, 1888. R. V. = refraction $\frac{6}{20}$ corrected, V. = $\frac{6}{20}$ +.
L. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{15}$ +.

Nov. 18, 1889. R. V. = $\frac{6}{80}$, L. V. = $\frac{6}{20}$.

November, 1890. R. V. = $\frac{6}{20}$, L. V. = $\frac{6}{20}$.

Oct. 3, 1893. R. V. = $\frac{6}{20}$, L. V. = $\frac{6}{20}$. Incipient senile cataract in each eye.

September, 1898. This patient has not required further treatment of his eyes; otherwise I should certainly have seen him.

CASE XXI.—Mrs. S. S. T., aged seventy. General health very feeble. Incipient senile cataract in each eye.

R.



L



Nov. 10, 1890. R. V. = $\frac{6}{50}$ refraction corrected, V. = $\frac{6}{10}$. L. V. = $\frac{6}{50}$ refraction corrected, V. = $\frac{6}{10}$. Ordered glasses.

Oct. 21, 1893. Incipient senile cataract in each eye. R. V. = $\frac{6}{30}$ refraction corrected, V. = $\frac{6}{9}$. L. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{9}$.

R.



L



In 1895 she died. She was under observation *three* years. Notwithstanding the ophthalmoscopic evidence of marked development of the cataracts and the enfeebled state of her health, her vision was clearer at the end of that period than at the beginning.

CASE XXII.—Mr. W. L. A., aged seventy (colored).

Incipient senile cataract in each eye. General health good.

June 1, 1891. R. V. = $\frac{4}{60}$ refraction corrected, V. = $\frac{6}{10}$. L. V. = $\frac{4}{60}$ refraction corrected, V. = $\frac{6}{10}$.

June 21, 1897. R. V. = $\frac{6}{60}$. L. V. = $\frac{6}{15}$.

August, 1898, he died. He was under observation *six* years and his vision for distance was much clearer without glasses in 1897 than it was in 1891.

CASE XXIII.—Mr. J. W. B., aged 73. Complains of epiphora which has troubled him one year. Complete senile cataract in R. E. Incipient senile cataract in L. E.

May 14, 1894. R. V. = fingers at six inches. L. V. = $\frac{6}{20}$.

Oct. 19, 1895. L. V. = $\frac{6}{20}$.

July 3, 1896. L. V. = $\frac{6}{20}$. Mature senile cataract in R. E.

Comment: Patient was under observation *two* years; at the end of that time the vision of his L. E. for distance without glasses had not changed.

CASE XXIV.—Rev. A. H., aged 74. Incipient senile cataract in each eye. Iris tremulous. General health good.

June 11, 1891. R. V. = $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{10}$ — L. V. $\frac{6}{20}$ refraction corrected, V. = $\frac{6}{15}$. Reads Jæger No. 1 with proper lenses. Ordered reading glasses.

Feb. 4, 1892. R. V. = $\frac{6}{20}$ — L. V. = $\frac{6}{20}$. L. V. $\frac{6}{20}$ —.

June 17, 1898. Has had no treatment for his eyes since 1892 excepting a change of reading glasses. R. V. = $\frac{6}{20}$. L. V. = $\frac{6}{15}$.



With correcting lenses reads with R. E. Jæger No. 2, and with L. E. Jæger No. 1.

June 22, 1898. R. V. = $\frac{6}{20}$. L. V. = $\frac{6}{20}$ +. Ordered reading glasses.

Comments: Patient was under observation *seven* years. His distant vision remained without deterioration throughout that period. His power of accommodation was remarkably strong when he was last examined. The vision of L. E. had improved, notwithstanding ophthalmoscopic evidence that the cataract was now more advanced in that eye than in the other.

II. THE MANAGEMENT OF INCIPIENT SENILE CATARACT.

If I have had any influence in retarding the development of the cataracts, the histories of which I have just recounted to you, the result has accrued solely from an application of one cardinal principle to all. The opinion commonly entertained that senile cataract is an affection dependent upon failure in the nutrition of the crystalline lens has always seemed to me sufficient to explain the phenomena. And my intention has been, therefore, to conserve the elements which are essential to the health of those parts; in other words, to do what was possible to maintain, within the limits compatible with health, the blood-supply of a structure not itself provided with blood vessels.

In order to accomplish this purpose it is necessary to provide for the well-being of the general economy, as well as to establish a proper régime for the organ itself. Here, obviously, is common ground for the general practitioner and the ophthalmologist. For there can be no doubt that the function of the general system must be approximated as closely as possible to the normal in each of these patients, if we are to do for them all that may be accomplished. It is unquestionable that an early diagnosis is the first essential in the local management of incipient senile cataract. There can be no difficulty in detecting the presence of a well-marked cloudiness of the crystalline lens, but in the primary stages of the disease such changes may not be detected unless one is constantly on the lookout for them. When they are discovered it is important that nothing be left undone to prevent the further development of the degenerative changes. If one were to preserve the function of any other organ of the body that had been touched by disease he would relieve it from every injurious application, while at the same time he would not absolutely interdict all exercise of it. The condition is analogous as regards these cases of incipient senile cataract. Over-exertion must be avoided, but a conservative use of the eyes will promote the health of their integral parts.

Injurious strains of the visual apparatus are obviated to a considerable extent by correction of errors of refraction. The fitting of glasses may appear to some of you a very simple matter, but for all that you may be sure that it is not done by "rule of thumb," and its proper accomplishment will never be possible to any one who has not achieved a knowledge of medicine as well as of optics. An adequate correction of errors of refraction ought always to be made. Should heterophoria be found causing an unmistakable eyestrain, I would remove it by operations upon the ocular muscles. But, as yet I have not seen an instance among this class of patients in which I supposed that condition to exist. Measures directed to the betterment of the general health, and measures directed to the removal of local strain in the organ of vision, ought to be supplemented by regulations respecting the general use of the eyes. For many years, I have told my patients that they could sew or read by good light until the sense of fatigue should warn them that their visual apparatus was in need of rest. And experience teaches that such a rule, simple as it is, will be the safest one for these patients to follow.

In conclusion permit me to observe that, in view of the facts and deductions which I have presented to you to-day, it would be greatly to the advantage of both physician and patient, if some of the current opinions regarding incipient senile cataract should receive a medical overhauling.

CLASSIFICATION AND DIFFERENTIAL DIAGNOSIS OF SOME OF THE COMMONER FORMS OF INSANITY.

By J. JOSEPH KINDRED, M. D., of New York County.

October 20, 1898.

As a preliminary to the consideration of the differential diagnosis of the commoner forms of insanity, we will refer first, in a general way, to some of the elements that constitute insanity.

Definitions of insanity are, like most other definitions, little, if at all, conclusive and therefore, they will be given here with all their defects, only for what value they possess.

My own preference is perhaps best expressed in the words of Dr. Maudsely as follows: "Insanity is in fact a disorder of the brain producing disorder of the mind; or to define its nature in greater detail, it is a disorder of the supreme nerve centres of the brain—the special organs of mind—producing derangement of thought, feeling, and action, together or separately, of such degree or kind as to incapacitate the individual for the relations of life. Mind as used here may be defined physiologically as a general term, denoting the total sum of those functions of the brain which are known as thought, feeling, and will. By disorder of the mind is meant disorder of these functions."

The essential element constituting insanity is intellectual and moral irresponsibility, and it becomes extremely important to determine the existence or non-existence of insanity in cases involving the validity or criminality of persons whose sanity might be the subject of legal investigation.

Especially in this day of high business pressure and brain strain are the medico-legal aspects of insanity interesting and

increasingly important. Indeed, the medico-legal portion of the subject at the present time has come to form, as is well known, a separate field of scientific work and investigation. If not in criminal cases, in which expert alienists are apt to be called to testify, then certainly in many other important will cases and others, contested on the ground of insanity, the family doctor is often called upon to furnish accurate knowledge as to the insanity or sanity of persons whose testamentary or other capacity may be questioned. And on the doctor's knowledge in detecting insanity and its classification, may depend the fate and rights of many unprotected and helpless ones.

Not only in civil contests but in criminal cases also, the general practitioner as well as the alienist should, in justice to himself, his patients and the public, familiarize himself to some extent with the ordinary forms of insanity and their classifications, so that he can discharge a public duty in cases which have come first under his observation, where there may be at stake the life or liberty of persons, insane or alleged to be insane, at the time of the commission of serious offenses, which are criminal or non-criminal, of course, according to the proven mental state of the offender at the time the offence was committed.

There are many cases of insanity of the "borderland type" outside asylums, whose mental state and legal responsibility are the subject of difference of opinion on the part of honest specialists—such as the rather famous case of Paul Genz, who, contrary to the evidence given by expert alienists, was hung in Hoboken, N. J., though insane, and therefore irresponsible; the case of the young newspaper artist, Koevner, now pending in the New York city criminal court; the case of the wealthy Thurber, once under my treatment, and who a few months ago nearly killed his attendant with an axe at Patchogue, Long Island, and many others.

It is not, of course, the province of a paper of this kind to discuss the technicalities brought out by specialists in the differential diagnosis of "borderland" or difficult cases, where

the mental alienation, though certainly existing, is not so easy to detect except by those specially trained and associated closely for a long time with the insane.

In this connection I cannot refrain from drawing attention to the fact that so many self-constituted specialists rush on the witness stand and into print to make over-confident statements of facts when they really have only unlimited impertinence, and at best, merely a theoretical knowledge of a subject which constitutes a life-work with practical men who have had long experience with pathological mental states, during actual residence and study in regular hospitals for the insane.

We prefer, first, to divide in a general way all the insanities given in the usual classification, into a single small group, placing in each group all the insanities characterized essentially by certain predominating mental symptoms; and afterwards to sub-divide this small group into the most usual classification.

The first group expressing the chief mental states is as follows:

1. States of mental depression; type, simple melancholia.
2. States of mental exultation; type, simple mania.
3. States of regularly alternating mental conditions; type, *folie circulaire* or circulating insanity; other types, recurrent mania, and the so-called matatonia.
4. States of fixed and limited delusion; type, the so-called mono-mania; also, the more recently described disease, paranoia.
5. States of mental enfeeblement or dementia; types, terminal dementia or permanent feeble-mindedness following acute attacks of mania and melancholia and other acute insanities; another type, the so-called primary dementia and also idiocy, imbecility, and organic dementia resulting from organic brain disease.
6. State of mental stupor; type, anergic stupor, melancholic stupor, acute dementia, and secondary stupors, following acute insanities.

7. States of defective inhibition or will power; types, homicidal impulse, suicidal impulse, dipsomania, moral insanity, etc.

8. The insane diathesis; type, an insanelly neurotic temperament.

We would again subdivide each of the above-mentioned groups into the classification of Dr. Clouston:

1. States of mental depression (melancholia, psychalgia), (a) into simple melancholia, (b) hypochondriacal melancholia, (c) delusional melancholia, (d) excited melancholia, (e) resistive (obstinate) melancholia, (f) convulsive melancholia, (g) organic melancholia, (h) suicidal and homicidal melancholia.

2. States of mental exultation (mania, psychampsia), (a) into simple mania, (b) acute mania, (c) delusional mania, (d) chronic mania, (e) ephemeral mania (mania transitoria), (f) homicidal mania.

3. States of regularly alternating mental psychorythm conditions (into *folie circulaire*, circular insanity, periodic mania, recurrent mania, katatonia).

4. States of fixed and limited delusion into monomania (monopsychosis) (a) monomania of pride and grandeur, (b) monomania of unseen agency, of suspicion of persecution and fear, (c) paranoia, with delusions of persecution, alternating with delusions of grandeur, etc.

5. States of mental enfeeblement (dementia and amentia, psychoparesis, congenital imbecility, idiocy), (a) secondary (terminal dementia) following mania and melancholia, (b) primary enfeeblement (imbecility and enfeeblement), imbecility, idiocy, cretinism, the result of deficient brain development, or a brain disease in very early life, (c) senile dementia, (d) organic dementia (the result of gross organic brain disease).

6. States of mental stupor (psychoma), (a) melancholic stupor, "melancholia attonita, (b) anergic stupor, "primary dementia," "acute dementia," "dementia attonnita," (c) secondary stupor (transitory after acute mania).

It should be remembered as a cardinal point in differential diagnosis, that either of the mental states of depression or mental exaltation, or stupor or feeble mindedness or dementia may exist separately or combined in almost any one of the forms of insanity as a mere phase of that form and therefore the mental state of depression or exaltation or whatever other mental state that may exist may not necessarily have of itself without other diagnostic symptoms, any absolutely diagnostic value; and so it is that while each of these certain mental states may be the usual accompaniment and predominating mental symptom of certain forms of insanity, yet it would not be safe or scientific to diagnose a case as melancholia simply because the predominating mental system was depression, which is above all other symptoms the predominating mental state in pure, uncomplicated melancholias; nor would it be sound to diagnose a case as anergic stupor simply because stupor was present as the predominating symptom; nor would it be proper to call a case mania simply because there was present the usual exaltation and delusions which, as far as they go, are symptoms characterizing that disease. In a single case of general paresis or general progressive paralysis of the insane for instance, there may, during its earlier and subsequent stages, be combined all the mental states: Of depression (which might indicate melancholia), of exaltation or grandiose delusions (which might indicate mania in several of its forms), and of stupor, which might indicate one of the stuporose insanities, etc. To rapidly review some of the fundamental points which a practical physician would naturally consider in making a differential diagnosis of mental or other diseases, we will refer to the importance of learning as much as possible as to the natural temperament, diathesis, education, heredity, environment, normal mental calibre or peculiarities, the nutrition, the general appearance, mentally and physically, the general expression, and the general physical condition and actual present mental state of a patient in whom mental disease is to be detected and classified. It is necessary to make most

rigid examination of speech (ataxia, aphasia, etc.), general expression, consciousness, whether normal or abnormal or coma (and determine the kind of coma); manner of thought (whether incoherent, slow, or rapid); flow of words (whether slow and interrupted or rapid and incoherent); presence or absence of drunkenness, drugging, meningitis, brain syphilis, the fevers, sunstroke, traumatic injury to head (shock), hysteria, simple delirium tremens, the temporary cerebral effect of moral shock or the delirium that precedes death in many diseases and in old age.

The forms to be clinically described and differentiated from each other will be narrowed down to the ordinary forms of melancholia, mania, general paresis or gradual progressive paralysis of the insane, syphilitic insanities, acute alcoholic and drug insanities, paranoia, anergic stupor, and the stuporose insanities. The principal efforts, in the daily practice, of the alienist relate chiefly to differentiating certain phases of general paresis or progressive general paralysis of the insane in the first and second stages from certain forms of mania, especially alcoholic mania, with its tremors and peculiar emotionalism and grandiose delusions, so much like the same symptoms in the first and second stages of general paresis; and in many such cases only the most practiced expert and time can make the differential diagnosis with unerring certainty. The most valuable differential point is the presence in general paresis of a large number of somatic or physical signs, such as the Argyle-Robertson pupil, Romberg's symptom frequently, and other pupillary symptoms, such as in irregular margin of the pupil, explained by the unequal action of the muscular fibers referable to lesions in the cerebrum in the motor centres, which are almost constantly present in a gross form in all cases of advanced paresis in the second and third stages. Melancholia with stupor is to be differentiated from the regular anergic stupor and other stuporose insanities by the presence in the latter of distinct physical signs such as the peculiar tendency in anergic stupor for the muscles to remain in a fixed position, as is seen most

markedly in catalepsy. Brain syphilis or syphilitic insanity if it be atypical can be easily taken for some earlier forms of general paresis, but it should be distinguished from general paresis by the difference in the ataxia and fibrillary tremors and technical differences in the mental symptoms. The differential diagnosis between mania and melancholia should be easily made except in a few cases of melancholia which present great motor excitement and some of the other symptoms of mania at times, but which do not present the peculiar mental exaltation and grandiose delusions so characteristic of acute mania. This paper, already too long because the subject is so comprehensive, could not here make more than short references to the technical differential points involved.

For the study of the mental disorders we must examine the state of mind as we do that of the body in bodily diseases. While it is essentially the clinical faculties that we put into exercise, yet there needs to be superadded a different mode of finding what the morbid symptoms are, more of comparison of subtle mental and moral changes, more scepticism as to what the patient says about his own symptoms, and often far more keenness in the analysis of character and motive, and in the effort to draw out the patient into a truthful and open state of expression. There should be a constant effort to interpret the clinical meaning of the subtle changes in the patient's face and manner, and to interpret the significance of what he says and the manner of saying it; while the difficulties of delicately leading him over the ground where his mental deficiencies exist are often excessively great. His every word and act must be closely scrutinized, for they form part of the symptoms on which the diagnosis rests.

OPERATIVE CURE OF INGUINAL HERNIA IN MEN.

By E. D. FERGUSON, M. D., of Renselaer County.

Read by title October 20, 1898.

When we reflect that at a reasonable estimate there are in this country over four million cases of hernia, the majority of which are in men and inguinal in location, the importance of the subject is manifest. In addition to varying degrees of discomfort due to the infirmity itself, or the wearing of retentive apparatus, a risk of incarceration or strangulation belongs to each case. Moreover it must be remembered that each person having a hernia must be classed as unsound and is prevented from entering some avocations by reason of that unsoundness. It is hardly necessary to advance arguments to show the importance of measures that produce a permanent relief of the malady whenever operative interference is indicated for any cause. Since the risk attending herniotomy has been so largely reduced, the indications justifying the operation have advanced until now many subjects of hernia are ready to submit to operation to avoid simply the disability due to the trouble, provided we can offer them a reasonable expectation of cure.

Those of us who are free from hernia can scarcely estimate the sense of disability that comes to those afflicted. The depth of this sense of affliction is strikingly illustrated by the readiness with which many submitted to the extremely painful and dangerous expedients of the itinerant "rupture surgeons" one and two centuries ago. Castration, the actual and potential cautery, and many kindred devices were used for ages before the invention of efficient mechanical means, all showing unmistakably the great desire of these patients to be rid of hernia.

With the invention of efficient trusses the occasion for

operation was so reduced, and the mortality and uncertainty of favorable results in cases requiring operation was such, that operative interference came to be regarded by the profession as only justifiable when the conditions existing directly threatened life. This aversion to operation still exists, for it is difficult to throw off the traditions connected with our professional training. This is particularly manifested in the prolonged and often forcible manipulations resorted to under the abused title of taxis. Recently I was requested to operate on a case in which "taxis" had been used from Saturday until Tuesday evening, and the results were decidedly "touching." It is hardly necessary for me to describe the condition of the structures in the groin following such abuse. While we are not prepared at present to advise that all cases of hernia which cannot be at once reduced should submit to operation, I am sure that personally I would consider fifteen minutes of gentle, unsuccessful manipulation sufficient to justify herniotomy as the lesser evil.

At present we can scarcely urge the possessor of a hernia which is comfortably retained by a truss to submit to an operation, even in view of the very slight risk incurred, but when we consider the tendency of most hernias contracted in early adult life to become "direct" in their nature, and with enlarging rings to become less and less controllable by apparatus, we can appreciate the probable widening of the field for operative interference. In those cases which have reached this latter stage, it seems there should be no hesitation in advising operation if there be no concomitant circumstance to contraindicate it. In view of the experience of the past few years it is hardly in the nature of a prophecy to affirm that the proportion of cases which will properly submit to operation will materially increase, and, if such be the case, it is manifest that we should carefully consider the elements entering into the operation in order that the best possible results may be obtained. The paths which have led to the present status of herniotomy have not been always straight. Many times, too, they led into closed lanes whence

it has been necessary to countermarch, though occasionally not until considerable confusion had arisen as to the true route to the highway. This uncertainty as to course was often due to a want of appreciation of the value of the different structures entering into the abdominal walls in preventing hernia, where it has never existed and where it is to be cured. The amount of learning and discussion spent on that point is amazing, in view of the comparatively simple view that now seems justifiable. Not a tissue enters the layers of the hernial tumor which we so laboriously studied and proudly repeated in our student days, but was considered at different periods as a more or less important factor in the prevention or cure of the infirmity. To-day some of our highest authorities place an importance on certain structures which seems hardly justifiable. I refer in particular to the muscular element of the abdominal walls. That muscle is an important factor in giving strength to the belly walls is manifest, but the readiness with which the fibres can be separated longitudinally illustrates how slight the protection would be if muscle alone made the boundaries. Whoever will carefully consider the different tissues concerned in retaining the abdominal contents can hardly fail to conclude that the main factor in protecting against hernia is that firm, strong, and dense aggregation of connective tissue cells known as fascia. The rarity of hernia at any point except where this layer is weakened or absent is evidence of its value as a preventive agent, aside from its known physical qualities. In my judgment a full appreciation and consideration of the value of strong fascia in protecting against hernia is the beginning of genuine success in the cure of these cases. And right here let me urge the importance of the fact that no scar tissue possesses the protecting influence of normal fascia. Scars may be so deep and strong, so blended with normal tissue, as to afford for a time a good and even efficient protection, but the usual tendency of scar tissue is to change gradually to the character of ordinary connective tissue, a condition manifestly not adapted to

prevent hernial protrusions. The history of the measures adopted for the cure of hernia is filled with evidences of the truth of this criticism of the scar. Let us go back only to the Heaton method of treatment whereby it was sought to introduce into the tissues about the ring, and occasionally probably within the neck of the sac, some extract of oak bark which would induce the deposit of "plastic lymph" and, by the bulk of this exudate, its adhesive or contractile properties, so lessen or close the ring as to cure the hernia. That a temporarily favorable result was secured in many of the cases so treated is well known, but it is also a matter of history that with time the exudate thus produced was quite generally absorbed and the parts usually relapsed into the original condition.

All operations which leave the peritoneal pouch in the inguinal canal fail to secure the coaptation and intimate blending of tissues calculated to bear the strain of forcible pressure on the abdominal contents, though the method of Wood, who sought to approximate the pillars of the ring by a buried suture, applied often without any incision, was the best of all the "blind" methods of operating, and, in fact, gave in the hands of the originator a fair percentage of cures. The fact that this method was developed in pre-antiseptic days gave it a value it does not now possess.

Many of the operations even down to very recent years have included the preservation of the sac, which was treated in various ways, *i. e.*, simply shoving it back into the abdominal cavity, infolding it and making a "buffer" of it, as in McEwen's method, or quilting it backwards and forwards, as proposed by Kocher and Dr. J. D. Bryant. While opening the sac was regarded as notably increasing the operative risk, such a course was justifiable, but now that proper care removes that risk, the sac is to be looked upon as pathological, and as such is to be removed, except in instances in which it is so small that it can be readily replaced within the abdominal cavity, but even in such cases adhesions to viscera may thus be overlooked, so that it seems wise to

open the sac in practically all cases submitted to operation. The "open" method of McBurney was based on the idea of a deep and permanent scar which would effectually close the canal, but time has shown that even scar tissue constructed aseptically (which could not occur as a rule, for open wounds in the inguinal region will usually become infected) would finally absorb and the hernia would recur.

It seems now virtually settled that if we are to expect wounds to heal with a restoration of practically normal conditions, we must comply with four conditions:

1. Parts of identical structure must be coaptated by an amount of surface to equal or exceed the normal thickness of the tissues.

2. They must be maintained in apposition a sufficient time to allow the preliminary stages of repair to pass over into a thorough blending of the parts.

3. The material used to secure coaptation must be so applied as to retain the parts without disturbing the nutrition.

4. Septic processes must be prevented, for they imperil and usually prevent a normal union, and in the case of hernia, if related to the deep structures, are usually followed by a recurrence of the descent of the bowel or omentum.

Many things enter into the application of these four principles, but we will briefly consider some of the more important. As to the first item, "that tissue must be united to identical tissue," it seems hardly necessary to adduce arguments, nor is it again needful to insist that the aponeurotic tissues of the belly are the strongest of the abdominal layers. There is one point, however, which is practical and should not be lost to sight; it is that if we are to approximate identical tissues in a deep wound, we must make our incisions in extent and location so as to have thorough access by sight and touch. Too short an incision is a common fault. A needlessly large cut is to be condemned, but let us not try to do our work in the dark. In estimating the surgical value of the several parts that form the abdominal parietes

in the inguinal region, it is quite possible that needless division and subdivision have been made. The essential elements to consider are related to the fact that the fibrous or aponeurotic layers are so situated and divided that in the normal condition the structures constituting the cord enter the transversalis fascia, above Poupart's ligament, receive an investment from that fascia, pass downwards and inwards along the upper border of Poupart's ligament with the fascia transversalis within and the aponeurosis of the external oblique without, and finally escape from this "tendinous" canal through a division of the fibres of the tendon of the external oblique at the external ring. It is proper to know of the conjoined tendon, the inter-columnar fibres, etc., but the general facts concerning the course of this canal are the important elements, for it is evident that in a normal condition intra-abdominal pressure tends to close the canal rather than to dilate it, and it is only when a "thin wedge" is entered at the inner extremity of the canal that the conditions favoring hernia may be said to exist. Should the inner extremity of the inguinal canal approximate to a position opposite to the external ring, a condition favoring the occurrence of hernia manifestly exists, and it seems probable that this state of affairs occasionally occurs. The steps to reconstruct this canal when it has been changed by hernial protrusion will vary according to circumstances, but in general terms may be said to include the placing of the tissues of the cord at the extreme upper and outer portion of the internal ring, *i. e.*, the outlet through the transversalis fascia, the external layers of tendinous structures having been opened so far as needed, and then, after clearing from the opening all extraneous material by scraping so as to expose the fibres of the tendons, unite from below upwards and outwards the posterior and superior portion of Poupart's ligament with the conjoined tendon and the transversalis fascia to a point just short of injurious constriction of the cord, a point manifestly only to be settled by the judgment of the operator, but usually defined by closing so as to include firmly

the cord and a portion of the finger of the operator, which on removal will insure against undue constriction. The tissues entering into the tendon of the external oblique and the external border of Poupart's ligament should then be closed over the cord so as to reconstruct the canal.

If, as is the case in some old hernias, the relations of these layers are not clear, we must depend largely on the thoroughness with which we approximate the fascial borders of the tendons about the normal opening, leaving the cord at the upper and outer portion, where the pressure will be at a minimum. It is hardly wise to extend the incision in the fascia transversalis so as to displace the internal ring further outwards and upward (as has been suggested by Potemski and others), or to place the cord in an opening in the bone, as has been recently proposed. In cases where the testicle may properly be removed, the closing becomes a very simple affair, and the cure should be definitive, for no place is left to begin the "wedging" process. In some cases I have found it justifiable to excise the testicle, and I must confess a certain satisfaction in doing it, since the remaining steps of the operation were rendered simple and efficient. Of course in all this it has been assumed that the sac has been closed at the general peritoneal level, and excised.

The second element of success noted was that the tissues "must be maintained in apposition a sufficient time to allow the preliminary stages of repair to pass over into a thorough blending of the parts." It is scarcely possible to give definite metes and bounds to this period, though it is probable that it extends over several weeks, possibly two or three months. As the subject presents itself to me the risk of recurrence varies at different periods, according to the procedure adopted. If the fibrous tissues are well coaptated by good suture material, the risk of recurrence immediately or soon after the operation is practically *nil*. If the suture material is of a character soon to weaken or disappear, say in a week or two, then there comes a period of great risk, only to be bridged by rest and the good fortune that for

some weeks no strain from cough, constipation, etc., has resulted in the trickle that will eventually make a flood. If, on the other hand, the approximation has been maintained until a thorough blending has occurred, time will render the parts more and more like unto those which have never known the surgeon's knife. Should the closure be by inflammatory exudate, the protection will be greatest shortly after the operation, but will soon begin to diminish, possibly to disappear entirely. On the other hand, if permanent suture material be used, and tension is put on this with the idea of holding the parts together by non-living material, then one of two conditions is liable to arise: either the stitches will cut into the tissues until they no longer hold the parts securely, or, acting as foreign bodies, they will furnish a convenient locality for the home of some wandering bacillus and cause an inflammatory process, which will change the new union into ordinary scar tissue with a tendency to absorption and weakening. The selection of suture material is therefore an element of importance, of greater importance than many of the elements which go to make up so much of the recent "improvements" in curative herniotomy. We may vary somewhat the steps of the operation without very materially affecting the results, but without good suture material we must fail in attaining the highest practicable success. Experience has convinced most operators that suture material used in uniting tendinous structures should possess strength sufficient to bear all possible strain, a durability of at least two or three weeks in a state of fair tension, reasonable absorbability, and should be aseptic. Few operators now leave metallic sutures in herniotomy wounds, so that practically we are reduced in our choice to silk, catgut, and animal tendon. If silk were more readily absorbed, it would be an ideal suture material, but the spontaneous reopening of wounds months after closure for the discharge of ligatures and sutures of silk is too common to be ignored in making our selection. The difficulty of sterilizing catgut, and the uncertainty of its durability under any method of

preparation, are grounds for hesitation in accepting it, in particular for closure of the aponeurotic tissues, though we may concede that recent improvements in its preparation have added to its safety and efficiency. At present, however, the tendon from the tail of the kangaroo appears to afford the best suture material, particularly in herniotomy. It is not improbable that in the domain of synthetic chemistry lies the possibility of the manufacture of a material that will serve us when cats and kangaroos fail, and which will possess the sterility, strength, and absorbability in which we may have perfect confidence. In my own work I now use kangaroo tendon, but should I be unable to secure that I would resort to catgut carefully sterilized and "tanned" by chromic acid or formaldehyde. Only in emergency would I use silk, though it is readily and extemporaneously sterilizable, and hence occasionally to be used. I believe many operators, including Dr. Coley, who has had a large experience, now use tendon only.

Our third condition, to wit,—“the material used to secure coaptation must be so applied as to retain the parts without disturbing the nutrition,” gives us possibly a certain choice of methods, and yet there is undoubtedly a good, a better, and a best way, though I will not assume that the *best* way is yet discovered. The interrupted suture, if applied so as to bring the entire line in apposition, must either be introduced at such short intervals as to be technically objectionable, or drawn so snug as to strangulate when placed further apart. The running or overhand stitch does not coaptate well where there is strain, though the rapidity of its application is a commendable feature. The cobbler's stitch, when placed well back, say one sixth to one quarter of an inch from the edge of the incision, and drawn with just sufficient force to coaptate the tissues, will secure a broad surface of union, for the suture should not cross over the edge at either end, but begin sufficiently back in the uncut tissues to give an unconstricted strip along the edge of the incision. If this “band” should gape at the edge, a light,

running stitch will suffice to hold the edges in apposition, but the first will bear the strain. Not to cross over the line at either end seems to me important, and to do this we introduce the needle (with an eye near the point) without threading, thread, withdraw, re-introduce, unthread, and thread with the other end, and so on to the end.

Stitches of a third to a half inch in length or even longer will secure excellent adjustment of the parts, but must be drawn so as to apply well the surfaces to each other before tying the final and only knot. I always add an extra loop to the knot to insure against untying. The remaining portions of the wound above the aponeurosis may be brought together in any way, but a to-and-fro use of the suture material with a final subcutaneous strand seems to me the preferable method. If done carefully the parts will be left in a state favorable to thorough union.

On our fourth condition—"septic processes must be prevented"—it would seem unnecessary to insist at this stage of surgical development, nor do I bring it forward to insist upon the details of sterilization of instruments, operator, assistants, and material. It is only in view of the fact that the skin of this region is especially liable to septic contamination, both before and after operation, that I call attention to the necessity for the thorough use of all reasonable measures to cleanse the surface and follicles of the skin before operation, and to urge the usefulness of *sealing* the wound, after it is closed, with some impervious and secure material. The use of a thin layer of sterile cotton saturated with iodoformized elastic collodion over the entire extent of the incision is my usual course. It is possible that other measures may serve, but this is easy of application and fairly efficient. Since experience has taught me that many wounds in the inguinal region which have been aseptic so far as operation is concerned, became contaminated by the patient in the care of his person, I feel a certain sense of comfort and security when the seal is placed and thoroughly dry. This seal can be placed over an interrupted suture, if that form of closing

of the skin is preferred, though it seems more satisfactory to apply it to wounds closed subcutaneously. With a good seal on a wound in aseptic tissues, closed aseptically, we may confidently expect normal union. The principal enemies to our work are those germs which hide in the follicles of the skin, and are liable to work to the surface some time after operation. These enemies are still existent, though fortunately our cleansing is becoming more destructive to them, but if a colony of them come to the surface just at the margin of the wound within two or three days after the operation, they will generate mischief. If, however, the wound has been closed in layers, and at the first evidence of trouble the seal is removed, the deeper structures will probably not be involved and the final success of the operation will be only slightly imperiled. In view of recent work in herniotomy we may now assert that in uncomplicated cases the danger to life from the operation is very slight—less than one per cent.; and we may almost say the patient recovers with less liability to hernia at that point than exists with one who has had no hernia.

Before closing the subject I wish to add a few words on the history of the operation. Though medicine knows no nationality, there is yet among us a sense of justice and “fair play” which desires credit given where credit is due, and in addition there is just enough of right and use in a proper sense of patriotism to justify our claiming for our country that which is her due. It is not necessary for us to be constantly requiring the statement that “I am of Paul or of Apollos,” but during several years my attention has been so repeatedly attracted by reference to modern herniotomy under the name of some persons unrighteously credited with having devised the operation, that it seems a duty to enter a formal protest. Leaving out of the question at present the slight modifications that are connected with certain names, I wish to call attention to the fact that it is usual to hear in our discussions and to read in our text-books and journals of “Bassini’s operation for the cure of hernia.” Now

what are the facts? Bassini's operation embraces three points: (1) the use of animal sutures—though he applies it as a continuous suture—after excision of the sac; (2) the lessening of the internal ring from below upward; (3) the closure of the remaining fibrous structures over the cord so as to reconstruct the inguinal canal. The relative importance of these items is in direct order of their statement, and priority may properly be claimed in use and publication for American surgery.

Bassini first made his method public in 1888, and a statement that he had been operating by that method since 1886 is hardly admissible in a claim for priority in view of the following facts:

In October, 1871, Dr. H. O. Marcy of Boston read a paper on "A New Use of Carbolized Catgut Ligatures," which was printed in the *Boston Medical and Surgical Journal* for November 16, 1871. Lister had recently given to the world his experiments on the ligation of arteries with catgut, the ligature being buried and allowed to remain for absorption. This paper by Dr. Marcy included the *advocacy* and *description* of the use of catgut to approximate the walls of the ring so as to secure by buried sutures the healing and lessening of the hernial opening. This was supplemented by a paper before the American Medical Association at its meeting in 1878, and printed in its Transactions, in which he advocated the use of animal sutures to close or diminish the hernial openings, giving his reasons for such use from a practical and experimental standpoint. So far as the evidence is available, his publication was by several years the first that bore directly on the subject, having as an object the teaching of the use of buried animal sutures in closing or reducing the hernial opening.

I think it was in 1878 that Tilanus and Lucas Championniere read papers at the Amsterdam meeting of the International Medical Congress, in which they advocated the use of animal suture, and Championniere gradually developed his method of *mattress* suturing of the tissues about the ring and

canal, a method still used by him with excellent results. About the same time Czerny gave to the world his views in favor of excision of the sac and the approximation of the pillars of the external ring with animal suture. Again, in 1881, at the meeting of the International Medical Congress in London, Dr. Marcy presented the subject,¹ and advocated the excision of the sac and to "*refresh* the pillars of the ring or walls of the opening and to close by sutures" of carbolized catgut, though he also used tendon suture from the moose and caribou. At the meeting of the American Medical Association in 1887, and again in 1889, he discussed the subject, and in the two papers brought out all the points now regarded as important, to wit, the excision of the sac, the use of buried animal sutures, the closure in layers, the restoration of the obliquity of the canal, and the sealing of the wound.

It is possible that some references which would be germane have escaped me; I have omitted some as unnecessary; and I have entirely neglected to refer to the many expedients which are not directly related to the three points considered as essential, or have been dropped as inexpedient or useless. As the record stands, it is not just to American surgery to designate modern herniotomy by the name of a foreign operator. The wisdom of applying the name of any man to a procedure is open to some objection, though convenience often justifies it, but should it be applicable in this instance, we should speak, not of the Bassini operation for inguinal hernia, but of the Marcy operation; for Bassini has not preceded other operators in any single item of importance, while Marcy was manifestly first in advocating and using buried animal sutures, in the use of cobbler's stitch, in the subcutaneous suture, and in sealing the wound by an impermeable and adherent dressing. Many operators are now using these expedients in total and unjustifiable ignorance of their origin and under a false appellation.

¹ Transactions London Int. Med. Cong., Vol. II, page 446.

THE COCCYX.

By J. E. WALKER, M. D., of Stueben County.

October 20, 1898.

The many patients coming under our observation suffering with more or less sensitiveness and pain about the extremity of the spine, have led us to think seriously about the subject which some years since Sir James Y. Simpson named coccygodynia. Nearly half the cases of neurasthenia give a clear history of irritable coccyx, while there are occasionally those in which the condition seems to be purely a local one, due either to trauma or to some local exciting cause. When we observe the location and anatomic relations of the coccyx it is not surprising that it is subjected to accidents and is so frequently the seat of irritation. Triangular in shape its base articulating with the sacrum, formed from four small segments of bone—the larger one sometimes existing as a separate piece, the smaller ones diminishing from above downwards and usually blended into a single bone; the apex rounded, giving attachment to the external sphincter muscle, the borders to the sacro-sciatic ligaments and the coccygeus muscle; the surrounding tissue supplied by branches of the sciatic artery, the nerve supply being from the coccygeal and its communications with the posterior sacral. In front and just above the apex lies the coccygeal gland which is penetrated by branches of the sacral arteries; while from the fifth sacral and sympathetic comes the nerve supply. From the peculiar anatomical construction of this body differences of opinion exist as to whether it is an appendage of the arterial or nervous system. The nerve supply of the coccyx, being in relation to the sympathetic together with its con-

nection with the sacral nerves, is sufficient reason for the reflex disturbances so often prominent in cases of coccygodynia.

The condition is observed more frequently during youth and middle age. Females are oftener victims than males, probably owing to childbearing and to a more sensitive nervous organization. Many causes contribute to the development of this hyper-æsthetic state, not the least being trauma. Cases frequently come under our notice with the history of a fall upon the nates, followed by tenderness and pain about the spinal extremity. One subject was thrown on the horn of a saddle, another on the arm of a chair, two have fallen from hammocks striking directly on the end of the spine, two have given a history of suffering following confinement. Cases of fracture occurring during childbirth are recorded. With a certain number of patients it is impossible to trace a direct cause, the condition seeming to depend upon a neurasthenic or depraved state of the system. Many suffering with so-called spinal irritation refer to the coccygeal region as the most sensitive point. The symptoms vary with the pathological state and general sensitiveness of the patient. When there is necrosis, neuritis, or periostitis with deformity, the suffering is usually most severe. Some are scarcely able to walk or sit because of the intense pain produced thereby. Riding is intolerable, and a pillow or cushion has to be a constant companion. Defecation is sometimes almost impossible, while micturition and sexual intercourse are often interfered with. In neurasthenic patients severe headaches are at times produced by pressure about the coccygeal region, and the lower part of the pelvis is subjected to painful spasmodic contractions. In extreme cases the suffering is intense, and the picture is one of almost hopeless despair. From the above there are many shadings, and a complexity of symptoms presents itself in some subjects, which is of interest to both the physician and surgeon. The fact that many patients suffering from coccyalgia have been subjects of injury from falls, is a sufficient explanation for the symp-

toms of traumatic neurasthenia which obtain in quite a percentage of cases.

The treatment of disease of the coccyx and its surroundings, whether we call it coccyalgia, coccygodynia, coccydynia, coccyxitis, coccygitis, or otherwise, resolves itself into constitutional, local, and surgical. When it seems evident that the condition depends upon a debilitated or depraved state of the system without a history of injury or local pathological changes, general tonics and restorative measures should be employed with such local treatment to subdue the pain and tenderness as in any case of neuralgia or neuritis depending upon the same cause. Hypodermatic injections of different substances have been employed locally, among them morphin, atropin, hyoscin, and antipyrin which seem to work well in some cases. Various inunctions have proven useful, such as belladonna, veratria, aconitia, and cocaine. Anodyne liniments at times afford temporary relief. Counter-irritation with the galvano-cautery has occasionally answered a good purpose in our hands. The application of alternate hot and cold packs applied with spinal bags has sometimes given relief as in cases of spinal irritation. Electricity has usually been disappointing, though both the interrupted and continuous currents have been employed in various ways, usually with the negative pole in the rectum, the positive as applicator. We have a right to expect relief from the high tension current as well as from galvanism, but both have failed to meet with our expectations in the treatment of the severer cases, while in mild ones some improvement has been afforded. Where there is deformity with necrosis, neuritis, or serious organic change, surgical interference becomes necessary. The operation for the removal of the coccyx is so simple it would hardly seem worth while to describe it. The subject having had preparatory treatment by restricted diet, proper hydrotherapy, thorough clearing of the bowels, etc., is anæsthetized and the field of operation rendered aseptic. The patient is placed in the right lateral position; the index finger of the left hand of the operator is introduced

into the rectum in order to fix the coccyx, while with the right hand a free incision from the apex to the sacrum is made with a strong scalpel. The bone is rapidly dissected out while an assistant grasps it with strong tenaculum forceps. The separation from the sacrum is easily accomplished, and but little hæmorrhage occurs as a rule. After perfect hemostasis is secured, a long curved needle supplied with good catgut is passed down through the tissues from right to left, the point emerging opposite the entrance, care being taken not to pierce the mucous membrane of the rectum. The necessary sutures are introduced when the parts are brought into perfect apposition, the cavity being thereby completely closed; the surface is dressed in the usual manner. The operation is done in less time than it takes to describe it, and the patient is placed on the road to recovery. The process is so simple and the results are so good that it would almost seem the coccyx had been a useless appendage and its ablation entirely justifiable.

Various suggestions have been made regarding the use of the dental drill in the removal, and Simpson advised the severing of the tissues from the coccyx, leaving it in situ. Others have spoken of the great danger of hæmorrhage from the venous plexus underneath, but from quite an experience we find no difficulty in its resection, and under asepsis, no dangers to be feared. We would not advocate operative interference except in those exaggerated ones where the condition seems to be a local one. Though the psychic effect might sometimes be good in neurotic patients, we have only operated on those where there was marked deformity and much suffering caused by direct injury.

The following cases taken from our records may be of interest:

CASE I.—Mrs. D., age 34, admitted February 11, 1898, married, mother of three children, gives a history of debility with much suffering for years. Cardiac, pulmonary, and abdominal examination negative. When twelve years of age she fell upon the nates while kicking, inflicting so much of an injury as to cause her

to be in bed for some time. Has since experienced pain about the end of the spine, becoming so severe in after life as to interfere with defecation, and produce obstinate constipation. The suffering was so great that her physician resorted to morphia, thereby inducing chronic morphinism. When admitted, her condition was deplorable; she had attempted suicide the day before. The narcotic habit was cured by isolation and general treatment; though a most serious undertaking. One month after beginning treatment she was prepared for operation. The coccyx was deflected at right angles to the sacrum, being turned toward the left and inward. Internal hemorrhoids from which she had suffered were clearly defined. After extirpating the coccyx, the end of sacrum was so prominent that a portion of the lower vertebra was removed; this gave a much better appearance. The sphincter was thoroughly dilated. Primary union obtained. The result was more than could be asked and beyond expectation. Patient has since been perfectly free from constipation and hemorrhoids. Walks, rides, drives, and works without any inconvenience, and is practically a well woman, having nothing to remind her of her former suffering.

CASE II.—Miss M. Admitted June 21, 1898. Age, 23. Single, typesetter. Father died of tuberculosis. Mother in good health. Was well in early life and until four years ago when she fell on the end of the spine, from which time she has suffered from extreme pain and tenderness about the coccyx. Has had many reflex disturbances, causing a nervous debilitated state. Cannot sit down without suffering. Bowels constipated with difficulty at evacuation. Has much headache and insomnia. Upon examination found the tissues about the coccyx hyper-sensitive, pressure producing much pain; the bone misplaced, being turned to the right and inward. After due preparation of the patient, the coccyx was resected. In two weeks time she was able to sit and walk with comparative comfort. Left on July 13, resuming her duties without any further trouble. Constipation relieved, bowels moving without any distress.

CASE III.—Mrs. B. Admitted July 3, 1898. Age, 34. Married, has borne one child. Mother died when patient was young. Father neurotic. From childhood was exceedingly nervous and precocious. Has never had any serious illness. Twelve years ago fell from a hammock, striking on the end of the spine. Gives history of falls at different times since. Has always been hyper-

sensitive. Since her first injury has suffered much with pain in back and head. Obstinate constipation with painful defecation. Has to carry a pillow at all times; rides, sits, and walks with difficulty.

Examination. Cardiac, pulmonary, and abdominal, negative. Much tenderness over spinal region from head to tip of coccyx. Reflexes much exaggerated. Pressure upon coccygeal region produces pain the whole length of spine. Coccyx bent inward and to the left, being exceedingly sensitive upon rectal and vaginal examination. General condition one of profound neurasthenia. Treatment general, hydrotherapy, massage, electricity, tonics and laxatives. Galvano-cautery to spine. Cold and hot spinal bags alternated. Galvanism 5 to 10 M—, with annode as applicator; also inunctions. No improvement in the local condition. After two months treatment, the husband being a most excellent practitioner, and having exhausted all his resources before her admission, upon consultation it was decided to remove the coccyx which we did in the usual manner. More difficulty was experienced than common in freeing it from its attachments. Some hæmorrhage occurred which was easily controlled. Within one week she was out of bed and expressed herself as having less pain than at any time in years. While she still suffers from her neurasthenic symptoms, yet in many ways she is much improved and has no constipation. Can ride, sit, and walk with comparative comfort, having no pain or soreness in the coccygeal region.

CONCLUSIONS.

That in cases of obstinate neuralgia of the coccyx and its attachments, when the lesion is local, resection is justifiable.

That in all cases of deformity with or without neuritis or necrosis, when the lesion resists all other treatment, surgical measures should be employed.

That in cases of general neurasthenia without specially localized manifestations, operative procedures should not be considered but general treatment should be relied upon.

That excision of the coccyx is comparatively a simple operation and under asepsis practically devoid of danger.

INSANITY FOLLOWING SURGICAL OPERATIONS.

By WILLIAM D. GRANGER, M. D., of Westchester County.

October 20, 1898.

Only one or two cases to the thousand of insanity following surgical operations are recorded. Many asylums, with thousands of admissions, make no mention of operations as a cause. In two thousand cases studied, I have to report two cases. It is to be remembered, however, that by no means do all insanities go to an asylum. Of 46 cases reported by Dewey¹, but 21 had been in asylums. The discussions of gynecologists show that but few of the cases they report ever reach the asylum door. In considering these cases, they must be divided into two classes: 1st, those whose insanity is due to the operation alone, and this includes mental anxiety, the anæsthetic shock, the character of the dressing, pain and septic poisoning; 2d, cases where the person before operation is to be classed as neuropathic, hysterical, or in the early stages of insanity.

Histories furnished by the general profession are often extremely imperfect, and none more so than those from the gynecologists, who report many cases. Dewey² reports eight cases of insanity, personally observed, following operations in persons of previously sound mind, and, in addition, "many cases" where patient "had been insane or highly neuropathic before the operation." To get at the truth, a more careful report of cases, and a broader and clearer understanding of the complications unduly causative, are necessary. In no disease is cause so uncertain and complicated as in insanity; in no disease is there greater necessity for the use of knowledge based upon experience, and in none is greater discrimination and the use of an analytical method demanded. In asylum

¹Unpublished manuscript read before American Medico-Psychological Association, 1898.

²*Loc cit.*

reports one may see a long column of given causes, and grouped under each cause may be but one case or tens of cases. No one feels the imperfection of this table more than the compiler. Each case should have a foot-note. So infrequently does insanity follow operations that some doubt if it is a cause, rather considering the operation little more than an incident. But this proposition cannot be maintained. A careful study of cases will show that the operation, judged by proper interpretation of the signs, is a cause. One of the two cases coming under my observation has twice been insane following operations. A woman, unmarried, 26 years old at second attack, was operated upon several years ago, under ether, for a tumor upon the shoulder. After a week, as the wound was about healed, she became violently maniacal, and remained so for a week; the mental symptoms then slowly disappeared as she recovered. Within two years of her second attack she lost her mother and grandmother. The home was broken up, and she came East to visit relatives in the spring of 1897. She had sufficient means for comfortable support. In the fall of '97 she consulted a surgeon and arranged to go to a hospital for removal of a tumor of the breast. This proved to be benign. The operation was successful, and the wound healed by first intention. There were symptoms of mental trouble at hospital, and after ten days she returned to her uncle's house. Mental symptoms appeared in a few days, and quickly passed into most violent mania. It being impossible to care for her, she was sent to my sanitarium. Within two days of admission the menses appeared, and on their cessation she became quieter. Subsequent history showed that the activity of the mania increased during the week previous to the menstrual flow. Her insanity began about one week before the first menses following the operation. She entered the hospital just after the end of the last menses preceding the operation. This was arranged by patient and her physician. The friends of the patient can remember nothing unusual during the menstrual epoch preceding the operation.

In studying the subject it is necessary to take a broad view and consider: 1st, those factors existing prior to the operation and predisposing the individual to insanity; 2d, factors arising from the operation, and 3d, those existing as exciting causes following the operation. A perfect review cannot be made, because insanity itself is by no means a solved problem, cause is still less clear, and lastly, the history of these cases is too imperfectly reported for correct and impartial investigation and absolute deduction. Granted the proposition that insanity can follow a surgical operation, it is evident that whatever predisposes an individual to the disease increases the liability at the time of the operation. Time will allow only the most cursory review of the conditions predisposing an attack of insanity preceding the operation, and yet nearly the whole question of causation of insanity is bound up in them. Among the most potent of them is hereditary influence, always a source of danger when present. Puberty, advanced age, the climacteric, and other periods are to be considered. Syphilis, alcoholic and other drug excess, have an influence. Continued ill health, pain, loss of sleep, over-work, privation, and a host of other similar causes, should be mentioned. Lastly, we have those cases in which insanity is already in the incipient stage, ready for any actively exciting cause; also the neuropathic and the hysterical. A proper study of each case will show these predisposing causes to be important factors in the etiology. I have purposely separated hysteria from the broader classification of neuropathic cases because of the report made by Angulucci and Pieraccini¹ upon insanity following gynecological operations in hysteria. This report places hysteria in a class by itself, and I must briefly quote from it. Alienists and gynecological surgeons were asked how many cases of insanity they had observed following removal of the uterus and appendages for the treatment of hysteria. One hundred and fifty replies were received, including eighteen from the United

¹On the Advisability and Efficacy of Surgical-Gynecological Treatment of Hysteria and Mental Alienation. By G. Angulucci and E. Pieraccini. Reggio-Emilia, 1897.

States and Canada. Seventeen hysterical women are reported to have been observed as insane, after removal of the uterus or adnexa, performed to relieve the neurosis.

Of those reported not insane, ten cases are reported as "worse" so far as the hysteria is concerned, after operation and thirteen were unimproved. Three cases of insanity are reported following gynecological operations, not made for purpose of curing the neurosis, but because of local disease. Three cases are reported "cured" following operations upon normal sexual organs for purpose of treating the neurosis, and nine hysterical women are reported "cured" after operations for the cure of diseased sexual organs.

The mutual anxiety, immediately preceding the operation, must be taken into account, and is always an added factor to other predisposing causes. How great this element is, cannot be judged by the seeming calmness of the patient. The tension is often to the breaking point, and the influence on the wrong side very great.

The direct influence of the operation in causing insanity demands one's attention. First, the effect of the anæsthetic. Insanity from operation is reported when no anæsthetic was used, and again mental trouble has supervened when an anæsthetic has been used without an operation. Kellogg¹ speaks of a case of insanity following extraction of teeth when no anæsthetic was used. This is useful at this point, because extraction of teeth is sometimes followed by insanity, but when many teeth are to be drawn an anæsthetic is generally given. In thirteen cases of insanity after operations reported in New York state asylum 1890 to 1896² three were recorded as following extraction of teeth. One of the two extractions was under ether. Mental symptoms came on at once, with delusions of persecution, and though without excitement, she killed her young child. While under my observation she was mildly demented, indifferent as to her dreadful act, and did not recover. Clouston³ gives the history of cases,

¹ Theodore H. Kellogg, *Text-book Mental Diseases*, 1897, page 113.

² Report N. Y. State Commission on Lunacy, 1896.

³ *Brit. Med. Jour.* Dec. 3, 1887, and *Dictionary Psychological Medicine*, Luke, 1892.

in which it is fair to conclude that the anæsthetic was causative in creating the mental attack. These attacks, as a rule, follow immediately the giving of the anæsthetic. He thinks it occurs largely among those "who are highly neurotic by inheritance or by acquirement." The disorder is often of a delirious type, and as a rule ends in recovery, though chronic insanity may follow. He also says it is a very infrequent cause, which is true. I can find nothing to throw clear light upon the influence exerted by kind of anæsthetic or by the quantity given; nothing concerning the relationship between quantity given and severity of the operation, or regarding the question as to how the anæsthetic is borne. Claims are made and statements and opinions given upon these points, but there the subject ends. It is justifiable to claim that the effect of the anæsthetic acts largely as a tonic agent. It certainly is one of many active agents in the causation of insanity following operation, while the quantity given and the way it is borne are also factors. On the other hand no one can tell how much insanity anæsthetics have prevented. The balance I judge is largely in their favor.

Insanity has followed the simplest operations. Facts are still lacking to show the relationship between the insanity caused by the gravity and length of the operation or the loss of blood. Again it is reasonable to suppose that the character of the operation, as above indicated, may operate in any given case, and where for any reason there is a danger of insanity, the more serious and prolonged the operation, the greater the danger. The part operated upon seems to have an influence. First in the list come operations upon the genito-urinary organs, the abdominal viscera, and the breast. Second in importance are the operations upon the eye, and particularly operations for cataract, while as has been said, tooth extraction holds an important place. The gynecologists think women are particularly liable to insanity, and more so if the operation is upon the genital organs or the breast. Currier¹ discussing the subject sets forth at length

¹ A. D. Currier, M. D., *Amer. Gynæcological and Obstetrical Journal*, July, 1898.

the nervous relationship between the genital organs and the sympathetic, the cord and the brain. It is true that a very large proportion of those becoming insane are women, and women who have suffered operations upon the genito-urinary tract, the breast, or the abdominal organs. Of thirteen cases reported in this state twelve were women, and of forty-six reported by Dewey, but four were males. Twenty-nine were after operations upon the female genitals, four after tumors of the breast, and but six were after operations outside the genito-urinary and alimentary tracts. One followed cataract in female, one the extraction of twenty-three teeth with cocaine in a male. The other cases in males were, one following gangrenous appendicitis, one operation for hemorrhoids, and one operation for ulcer of rectum.

It seems certain that operations upon the genito-urinary organs are by far the most frequent cause of insanity following operations, and these almost entirely among women. Dewey says his cases are gathered from private practice and from institutions receiving men and women, and that only six came from a purely gynecological practice. He questions, however, if women are more liable to insanity following these operations than men. He quotes Sears¹ who reports 167 cases, of which 102 were women, but who claims if strictly gynecological cases be excluded the sexes are about equally affected, for in fifty-nine eye cases only twenty-four were women. He, Dewey, thinks if the genital organs of men were as frequently operated upon as are those of women, the proportion would perhaps be equal. The opinion is valuable, coming from a trained alienist, and one who has made special study of the subject. It cannot, however, be proved. The number of operations upon men and women and the number of cases of insanity following must be better known before anything more than an opinion can be expressed. I cannot but think, in view of the more complicated organs in the female, their profounder physiological action, their greater influence upon the nervous system, and their pernicious influ-

¹Boston Med. and Surg. Journ., page 642, June 29, 1893.

ence upon this system when diseased, that operations upon these organs must exert a greater influence in producing insanity, than do operations upon the male.

I cannot but think that the facts, so far as we know them, are not far from the truth, and will not be materially modified. Nor does it seem to me reasonable to argue that because, leaving out gynecological operations, the ratio of sexes is more evenly divided, therefore operations upon the genitals should be equal. Thousands of operations are made upon the male genito-urinary tract, there are surgeons who treat no other part, and clinics where practice is confined to this specialty, but a case of insanity following such operations is almost unknown.

The disinfectant used in the operation has been questioned as a cause of insanity, acting by absorption and its toxic effect. Iodoform and carbolic acid are mentioned particularly. Nothing decisive has been brought to my notice upon this subject. If suspected, examination of the urine should be made, and the dressing can be changed. As I said of anæsthetics, so it can be said of aseptic surgical dressing, the good they have done in preventing insanity greatly outmeasures any possible harm.

Septic poisoning has been urged as a cause in insanity following operations, and it has been suggested, notably by Dewey, that one explanation of the frequency of insanity following operations upon the genito-urinary tract, and the alimentary, is first, the frequent presence of septic poisoning before the operation, and second, the difficulty of making, in many cases, perfectly aseptic operations or continuing it during the after care. I find nothing in the literature of this subject giving information that will allow correct conclusions; there is no record of a serious case showing a direct relationship between septic poison and the attack of insanity. Clouston¹ truly says, in discussing anæsthetics as a cause, "that agents such as belladonna, alcohol, etc., which cause delirium may also set up mania of the delirious form."

¹*Loc. cit.*

Septic poisoning frequently sets up delirium; it certainly is an "agent," and it is perfectly reasonable to claim that when present it is an important factor in determining insanity in any case where it appears after an operation.

Lastly, we will consider factors influencing an attack of insanity following the operation, and here I would say that the exciting cause, in proper cases,—those ready, as it were, to pass into insanity,—often act quickly, or a combination of causes find at last an exciting cause. Few cases of insanity develop immediately after the operation; the vast majority occur in a few days, a week, or within a few weeks. A few nights of pain or discomfort, or sleeplessness; a danger, too, of nausea or vomiting and inability to take food or water; the anxiety often following an operation, the few days when perhaps life hangs in the balance, and many other similar and well known conditions, common to the post-operative state, all tend to precipitate a crisis and bring on an attack of insanity. In women I cannot but believe that the menstrual period is, many times, a potent factor. Even when the uterus and ovaries are removed, the "habit," if I may so call it, is not lost. It is a question in my mind whether the case I have reported might not have escaped but for the intervention of the menses.

Age. All ages suffer. The youngest I have seen is that reported by Mr. C. T. Dent,¹ St. George Hospital, London, in a boy ten years old, after excision of knee. The oldest case of his was sixty-five. I think when the truth is known the age of those suffering from insanity following operations will coincide with insanity in general.

Form of insanity. If any form predominates it is the confusional form. All varieties are reported. The commoner and uncomplicated forms of acute insanity, that is acute mania and melancholia, are of frequent occurrence. Most of the cases are what we would call "acute," but a few show a slow, subacute development with tendency to become chronic. As to the duration, we seem to find an excep-

¹Dictionary Psychological Medicine, Luke, 1892.

tion to the rule governing insanity in general. The cases run a shorter course. But eight cases reported by Dewey lasted over one year, thirty-two less than six months. Result. Recovery gives a good record, and seems out of proportion to the general result. This is a pretty universal report. Of the forty-six cases reported by Dewey, twenty-seven recovered, several under treatment were improving, eight had died insane, three within a week after the attack, and but six, so far as I can discover from his record, are reported as chronically insane.

Briefly I have reviewed the subject announced in my paper, thinking it might be of some interest to the general profession.

DISCUSSION.

DR. C. C. FREDERICK, of Erie County, said that he had seen only one case. The patient was a woman, of thirty years, upon whom he had performed simply curettement and an Alexander operation. He subsequently learned that three or four years prior to this operation she had had an attack of acute mania, lasting for several months. She was very sensitive upon this point, and had refrained from saying anything about it when giving the clinical history. About two weeks after operation she began to act peculiarly, and in three or four days more she developed acute mania. She was in the Buffalo State hospital for about six months before she recovered, but she did recover completely. This case seemed to carry out the idea mentioned in the paper, but there is almost always a neuropathic tendency.

DR. FREDERICK HOLME WIGGIN, of New York County, said that last winter he had operated upon a rather neuropathic patient for the removal of an enlarged ovary. As the appendix bore evidence of several attacks of appendicitis, it was also removed. Several days after the operation the patient developed laryngeal diphtheria. She recovered from this satisfactorily, and was taken to her home in Philadelphia before she was really convalescent. Shortly after reaching home she developed acute mania, and was in an asylum for two months. She has now recovered completely. The insanity seemed to have been brought on in this case by the exhaustion consequent upon her trip, which had suppressed menstruation for one month.

THE USE OF CATGUT IN SURGERY AND THE IDEAL METHOD OF PREPARING IT.

By C. C. FREDERICK, M. D., of Erie County.

October 20, 1898.

This is an old and a somewhat hackneyed subject, but like many others which have been gone over time and again it still merits serious consideration. There are still many surgeons, both in general and in special lines of work, who continue to use non-absorbable materials for both superficial and buried ligatures and sutures. Frequently we all have had to deal with the persistent sinus deep in the pelvis or elsewhere, which did not heal because in its depths, imbedded in the tissues, was a silk or some other non-absorbable knot. Much has been written and many discussions carried on concerning the superiority of absorbable over non-absorbable sutures. Each article written and each discussion waged up to within the past four years had a weak point, and that was the fact that there was then no known method of sterilizing catgut with certainty without impairing its tensile strength. Another argument which has been used against catgut and which is absolutely untenable, is that it cannot be securely tied. When a knot tied in catgut slips, the proof is positive that it has not been properly tied or it would not have slipped. So may a silk knot slip if not properly tied.

There are several objections to buried non-absorbable ligatures and sutures; they are foreign bodies in the tissues, and nature tends to cast them out; they are liable to be the retainers and foci of infection because of their permanency, and when infected they will certainly either be cast out or produce a sinus which will not heal till the form of infection is removed. If the operators who bury silk, silkworm gut,

and silver wire, could see and know of all of their patients who have suppurating sinuses for months and years after their operations, I am quite certain a practical argument in favor of using absorbable sutures could be forced upon them.

The writer has seen four miserable women within four years who would have been well and happy if silk or silkworm gut had not been buried in their pelvic cavities. One the writer was himself responsible for. One had been operated upon six years before by a prominent surgeon in Boston. For two years she had pain after recovery from her operation, when an abscess broke at the lower angle of her wound. It continued to discharge pus and caused her no end of discomfort for four years, besides running down her general health. A crochet hook fished out two silk knots from the bottom of the sinus which was six inches deep, and the sinus promptly closed. Another case was that of a young woman whose round ligament had been shortened internally and sutured with silkworm gut. Nearly two years after the original operation, the sinus opened in the abdominal scar. I fished out two silkworm-gut knots with my crochet hook, but the sinus did not heal. I then sent her back to the surgeon who did her operation. He did an abdominal section twice in an effort to secure the offending sutures, but did not find them, and I understand she still has a suppurating abdominal wound.

I now have a young woman under my care who was operated upon five years ago for pyosalpinx. Silk was the ligature used. Six months after operation an abscess broke through the abdominal scar, and at the same time into the bowel, thus producing a fæcal fistula. She was operated upon four different times by two surgeons, and finally the fæcal fistula was closed, but the sinus running down alongside her uterus persisted. She has been opened three times since in an attempt to find that silk ligature, but it has never been located.

No surgeon knows when a non-absorbable ligature may become infected, and he has no right to subject his patients

to such risks so long as there are safe and reliable sutures and ligatures which do not carry this uncertainty with them. I have heard surgeons say, "I never had an accident with silk and I have used it for so and so many years." Do they always know whether their patients have had any trouble with them? Did that surgeon in Boston know that his patient had an abscess two years after, that she suffered four years and then only got relief after removal of the silk which he had used six years before? How large a proportion of our patients upon whom we operate do we ever see or hear from after they have left our surgical care? A very small percentage.

I do not think any operator can at this day argue in favor of the use of non-absorbable suture material. Nor do I think any operator can argue against the use of absorbable ligatures and sutures. Catgut can be thoroughly sterilized without diminishing its tensile strength. It can be had in various and uniform sizes. It is as reliable as kangaroo tendon, and much better because it is uniform in thickness and can be had in any length. I used kangaroo tendon for several months, but much prefer catgut now.

The knot of catgut, if properly tied, will hold as securely as silk. I have used it in several hundred abdominal and plastic operations and never knew a knot to slip. Catgut can not only be rendered absolutely sterile and still be strong, but it can be chromacized to any degree to resist absorption for almost any time desired and still be strong and sterile. Any material which presents these advantages cannot fail eventually to be the one chosen by all operators who have the best interests of their patients at heart and who desire to bring surgical technique and surgical convalescence as nearly to the ideal as is possible. I wish now to pass briefly in review the weak points in some of the better known methods of preparing gut, and then to speak of what seems to me the ideal method of to-day.

All methods are defective which have for the basis of sterilization of catgut or kangaroo tendon the boiling of it in

alcohol. The boiling of alcohol is 173° F., and catgut or kangaroo tendon cannot be sterilized at that temperature even in alcohol. Gut thus prepared has been proven clinically dangerous, and has been also proven septic by culture. The method of dry sterilization, consisting in gradually raising the gut in a drying oven to 212° to 220° F., is fairly effectual, but not absolutely to be relied upon. The tensile strength of the gut is also liable to be decreased. The method of boiling in cumol, whereby the gut is subjected to a temperature of from 250° to 350° F., is reliable as far as sterilization is concerned, but the tensile strength of the gut is liable to be injured. This is a very particular process and there are so many minutiae in it that it consumes a good deal of time. Otherwise than carefully done, sound catgut will be absolutely destroyed. I used gut so prepared for over a year and prepared it all myself, therefore know whereof I speak. The ideal method is that known as the formal process, in which formaldehyde is the agent used. This process I have used exclusively for the past two years, and as far as ease and simplicity in preparation and the quality of the gut prepared, I can unqualifiedly say that for sterility and strength gut so prepared is superior to any I know. The process has been described before in a general way, but the details of its preparation as worked out in my experience render it so much more simple and effectual than ever before described to my knowledge, that I thought to describe it here.

I buy catgut in coils as here shown. I also buy $\frac{3}{4}$ -inch glass spools by the gross, of J. Elwood Surgical Co. I then have the flanges of the spools notched with a triangular saw-file. The raw catgut is wound upon the spools evenly in one layer, tightly. One end of gut should be pushed through the barrel of the spool and caught one inch from the end by an ordinary hemostatic forceps. Then pass the gut over the notch in the flange and wind tightly till the barrel is covered, and then carry the end over the other notch and tie it to the free end, which has been held in the process of winding by

the hemostat. This prevents the gut from unwinding, and also from shrinking. By this process the gut tends constantly to shrink, and if not securely held it will shrivel up to nothing and be useless. The knot must be securely tied, for if it unties while boiling, that spool of gut is lost. The secret of tying catgut securely consists in reversing the ordinary surgeon's knot used in tying silk, i. e., tie a single knot first and then a double knot, draw it tight, cut the ends one half inch long, and it will hold.

The object of winding a single row of gut is to have the gut of uniform strength, for each place pressed upon by a strand of gut which crosses it is not thoroughly permeated by the formalin, and when boiled this place gelatinizes and produces a weak point in the ligature. For that reason the spool cannot be filled with successive layers. One spool holds enough gut for one or two long sutures, according to the size of gut. More of the smaller sizes can be wound on the spool than of the larger. While immersed in the formalin some chemic process goes on in the substance of the gut which permits it to be boiled in water for from 15 to 30 minutes. When removed from the boiling water it seems soft, and really is weak and elastic. But the immersion of it in alcohol, thus moving the water, renders it at once firm and strong.

The strength of formaldehyde is a 3 per cent. solution. The formaline comes in a 40 per cent. watery solution, hence thirteen parts of water to one part of 40 per cent. solution formaline, makes a 3 per cent. solution. This should be kept in well corked, wide mouth bottle or in some sort of a sealing can like a fruit jar. The same solution may be used repeatedly for months for treating successive batches of gut.

Immerse the wound spools in this solution for various periods of time dependent upon the size of the gut.

No. 0, the finish should be in about one hour; No. 1, about two hours; No. 2, about four hours; No. 3, about six to seven hours. Nos. 1, 2, and 3 are the most common sizes used in general abdominal and pelvic surgery. Care should be exercised in not allowing the gut to remain too long in

the formaline, or it may become too hard and brittle and break on tying.

After it is removed from the formaline solution, it should be placed in a vessel and water allowed to flow into the bottom up through the spools of gut, the object being to thoroughly wash out all the formaline, thus preventing further hardening of the gut. To accomplish this a rubber tubing from a wash-bowl faucet can be laid in the bottom of a bowl or beaker, the spools filled in and the water turned on for a period fully as long as the period they were in the formaline. If they are washed twenty-four hours it will not harm the gut. Up to this time nothing has been done but to prepare for the sterilization process which consists in boiling the gut for fifteen to thirty minutes in water in any open or closed vessel. Remove the spools with sterile forceps from the boiling water and place each size by itself in wide mouthed, ground glass stoppered bottles or in rubber sealed fruit jars previously sterilized by boiling. Pour over the gut clean alcohol (ordinary 95 per cent. alcohol) with 8 to 10 per cent. of sterile glycerine. Sterilize the glycerine by immersing a bottle of it for one-half hour in a water bath at boiling point. Catgut so prepared and so preserved will always be found to be strong, sterile, and reliable. It will keep indefinitely without deteriorating.

If a part of a spool is used at any time the balance need not be thrown away. The ends may be tied firmly and boiled again for a couple of minutes and placed in the jar again. Repeated boiling does not harm it.

To make chromacised gut I immerse the wound spools in the chromic acid solution for twenty-four hours. The formula I use is :

Rx	<i>Pot. bichromate</i>	.	.	.	.	.	1 1-2 grammes.
	<i>Carbolic acid</i>	.	.	.	.	.	.
	<i>Glycerine</i>	.	.	.	.	.	m m c. c. 10.
	<i>Water</i>	.	.	.	.	.	1 litre.

Dissolve the bichromate in the water and then stir in the glycerine and carbolic acid.

After immersion for twenty-four hours remove and hang up to dry.

The treatment from this point is the same as for plain gut. Immerse in the formaline solution the same and treat in all respects the same.

Gut so prepared will resist absorption from six to eight weeks in all tissues except kidney and peritoneum, where it will be absorbed in about half that time.

I claim for catgut prepared by these processes all the points of merit which can be demanded by the most exacting surgeon for a ligature and suture material.

WHAT TO DO TO BE SAVED, BEING THE CONCLUSION OF AN INQUIRY INTO THE CAUSES LEADING TO THE ABUSE OF MEDICAL CHARITY.

By THOMAS J. HILLIS, M. D., of New York County.

The author of this paper recognizes the difficulties to be encountered, and the magnitude of the task he has undertaken to-day, in presenting a remedy for the abuse of medical charity, as it exists in the community in which we reside.

This subject will be considered under four heads, and the responsibilities and obligations of these several heads will be dealt with as briefly as the importance of the subject will permit. The avenues for distribution, and the four great channels through which medical charity finds its way to the public feed trough, are the hospitals, the colleges, the medical societies, and the charity department of the city government.

There are defects in system, and gross mismanagement in all these avenues of charity distribution, and it is the purpose of the writer to point out these defects and suggest reforms that will bring no hardships to the worthy sick poor, while improving the moral, and raising the social, status of these several outlets of charity.

The mission of the hospital and the measure of its usefulness.

The authorities controlling the hospital of to-day have forgotten the real mission of that institution, that its place is only as a dispenser and vendor of medical charity; they have forgotten, too, that all the earthly possessions they have and own were obtained and acquired on the pretext of charity; the donations and bequests that have made them

rich were all given and bestowed on the presumption of this charity.

Hospital Sunday in the churches, one day in the year; hospital Sunday outside the churches, every day in the year,—an endless chain to which is harnessed the chariot of charity. The perennial, perpetual, eternal beggar, investing the haunts of civilized man, is the hospital, with hand outstretched forever, for a dime, a dollar, or an endowment. Like his cousin, the professional mendicant on the avenue, who grows mendacious as he grows rich, the greater the amount contributed to his want, the longer the prayer and the more certain the reward.

Now, this professional beggar must be reminded of his place in the community (a place valuable and important in its way, but one not absolutely indispensable to the public safety, were all to do their duty, and the profession aroused to recognize the obligation resting on it), so that he may not grow overbearing and step beyond his legitimate field, to where the physician is laboring, with intent to swindle him out of the proceeds of that labor. It is not desirable that we should fail to remind this professional beggar, the hospital steward, of his lowly origin, his original purpose, the measure of his usefulness and mission here on earth, which is, to cater to the wants of the sick poor—the sick rich do not need his aid, nor was it intended by the founders of hospital charity that he should receive it. The rich man, they reasoned, could care for himself; the workingman they taught and admonished to do likewise.

The hospital, it was intended, should serve as a first aid to the injured; to be a hostelry and a domicile for the poor and needy in medical distress. It was to pick up the odds and ends of suffering humanity, waifs fallen on life's highway and unnoticed by the crowd as it passed on its eager errand of business or pleasure; to care for these waifs was the object of the hospital, and its founders considered their purpose accomplished when they complied with these demands.

The hospital was not intended by its founders, wise men that they were, to be anything else than a dispenser of charity; they left to the noble profession that helped them create it all who were able to earn a living, considering such as illegitimate subjects of charity. This, they declared, was the doctor's birthright. Has the hospital stolen this birthright from the physician, or has he by weakness and folly permitted it to pass from his hands?

The transformation of the hospital from a purveyor of charity to a colossal corporation controlling the medical market, and freezing out the general practitioner.

Since the good old days, when the word "doctor" expressed all that had any value in hospital intention, changes have come with a vengeance, and radical ones at that; since then, the hospital has divorced itself from the doctor, except so far as it makes him a tool with which to accomplish its purpose, and a stepping-stone to advance its interests. True, it has not exactly turned him out of doors; but with a hospitality born of cunning and an eye to appearances, it retains him only as an old servant who is to render service for a home.

The governor, not satisfied to be a simple purveyor of charity, as his original charter intended, set about to enlarge the sphere of his operations, pulled down his barns to build bigger ones for the accommodation of all who crowded around him. To these he offered special inducements for their patronage; he told the people he was willing and ready to treat them for a dollar a month in advance, and give them a better class of medical goods for their money than they were able to procure from their family physicians, whom he advised them to dismiss, as incapable, expensive, and unnecessary.

The governor has thrown precedents aside, and declares that ethical laws cannot bind him. This governor through his dollar-a-month annex has made a flank movement on the doctor; has non-plussed and surprised him, by selling medical

talent for which he has not paid at a ruinous sacrifice to the producer, who is the physician. This ruinous competition has compelled the physician to close his office door, and the real-estate agent to put up his legend, "Office to rent," which is read by the governor, as he takes his daily stroll for recreation in the shady street away from the madding crowd, without comment or emotion.

The governor has despoiled practitioners by selling assets confided to his care for a song, *i. e.*, a dollar a month, in advance; he has turned his dispensary annex into a salesroom, where three days in the week he doles out, through his servants, to all who apply at his counter, medical talent for which he has not paid.

A dollar-a-month salesroom in proximity to his dispensary was a shrewd but knavish device catering to a so-called middle class, floating with purpose between the millionaire and the pauper, who each, in his sphere, was already well provided for by the grace of the surgeon whom he hypnotized by passes and incantations through the medium of charity.

The answer the governor made, when questioned as to his motive for running a dollar-a-month annex in conjunction with his hospital plant, when he was aware that such a course on his part was sure to bring disrespect on the whole medical profession, and make the practitioner a laughing-stock for the people, was, that he needed ready cash; that a dollar a month helped him increase the capital and the prestige of the hospital, which aimed ultimately to reach its millennium, and have palatial chambers prepared for the rich. He said further, he was determined that the interests of physicians should not swerve him from his purpose, adding obligingly that when the doctor got sick, he was willing to care for him at his dispensary, or, if hungry, he would refer him to his friend, the superintendent of outdoor poor, who, he was sure, would furnish him with a meal, or a pass to the workhouse.

Selling medical service, for which they pay nothing, every day in the week, often including Sundays, has made the hos-

pital corporations rich, domineering, and insolent. It has branched out from the simple hospital of old, whose function was to shelter and care for the sick who were unable to pay for care or treatment, to a palace, fitted up with every modern improvement, with suites of rooms to please the most fastidious, supplied with devices to allure the pauper from the alley, the working-man from his tenement, and the millionaire from his mansion. The simple hospital of days gone by is transformed into a gigantic trust, operated by a board of governors who have at their beck and call relays of physicians and surgeons to whom they pay nothing. Now, the inflated hospital corporation, which has grown on the site of the unpretentious hospital of years ago, demands and receives the services of the best medical talent of the city, and they sell it for a dollar a month in their annex, and at the most advantageous terms they can to the millionaire, who on specious promises they have tempted to be a partner in the profitable venture. So this plutocracy controlling the hospital has destroyed and despoiled a generous profession, bound it hand and foot, then cried exultantly, "The Philistines be upon thee, Samson!"

By the establishment of his dollar-a-month downstairs for the delectation of the workingman, and palatial chambers upstairs for the rich man, the hospital founded by the sovereigns of George the Third, and made wealthy by the free service of physicians, under the pretext of charity, has struck a death-blow at the legitimate practice of medicine, and openly insulted every self-respecting physician in the land. Behold, the surgeon in the amphitheatre alleviating human misery, and the corporation autocrat in the governor's room, scheming to deprive him of his livelihood—is it not a sight for the gods?

The motive of the surgeon in working for nothing for a gigantic business concern, which could well afford to pay him for his services.

Now, what motive would a surgeon have to work for a hospital without pay? Why does he give his services away,

services he prizes so highly, and for which he charges so dearly, outside the walls of the corporation plant? It is not to gain experience in the practice of his art, as he must have demonstrated ability in that art to commend himself to the consideration of the hospital authorities. For these men are known to look long and far among the crowd of eager applicants before choosing the man they wish to work for nothing until it pleases them to discharge him for infraction of rules, or to put a younger man in his place when age creeps on his scalpel and twists his elbow with the rheumatics.

It was not sheer philanthropy and love of being engaged in a good work that prompted the surgeon to toil for nothing for the governor, for, as far as known, the surgeon is not more benevolently inclined or advanced in the work of doing good than other members of the profession out of which he emerged. Was it love of fame and the hope of reward, fostered by the delusion of helping a so-called charitable institution in the work of getting rich?

We believe these were the motives prompting the surgeon to walk the wards of the hospital for the governor without compensation. If these were his motives, he has not realized much on his investment in the governor and charity; for the very means on which he counted to sustain himself while working for nothing for the hospital,—the rich private patient,—has been seized by the governor and appropriated to himself. It was a modest assumption that he would be permitted to attend wealthy patients who solicited his services, without any interference from the governor, for whom he worked faithfully as well as gratuitously in the amphitheatre on so-called charity patients, some of whom owned real estate. But this assumption was denied by the governor, who found means in his palace to cater to the rich, thus impoverishing his benefactor, as he had already beggared the practitioner by his dollar-a-month annex. The fame that came to the surgeon when he was decorated with the order of the corporation autocrat was short-lived; it wore itself threadbare very speedily, so rapidly, indeed, that now the

poor surgeon is compelled to wear an outer garment to hide its effacements.

The glory of working for nothing for a corporation departs from the surgeon, when confronted by hard facts, and becomes so irksome in the light of a strong common sense that it makes him look ridiculous.

The situation as it is with the governor in the saddle and the volunteer corps—the visiting staff—sullen and mutinous.

Few people are aware of the personal inconvenience suffered, and the tremendous amount of professional labor accomplished, by the painstaking, patient, and hard-working doctors comprising a hospital staff; too often, these men are hard pushed to make a respectable appearance and provide the necessities of life for their families; they have immolated themselves and neglected those depending on them for support, because an old custom declared that it was noble and honorable to give their services in the cause of charity. Now, there is no further excuse for such sacrifice, since the corporation demanding it can better afford to pay them for their services than they can to give them away. While, as has been hinted, the surgeon is not animated altogether by disinterested motives and pure philanthropy in giving away his services to hospitals and dispensaries; it is beginning to be understood by him that the game of hunting for hospital appointment is n't worth the candle, and that his anticipation of wealth and fame is far from realized after securing this prize.

The day the hospital reached its majority and set up a household of its own, it should have crowned its entrance into manhood by paying every man, in whatever capacity attached to the hospital, the market value of his services. That the laborer is worthy of his hire has been embalmed in divine story, and made the key-note of legal proceedings among civilized communities; but we suppose, since the surgeon entered the employ of the governor for sweet charity's sake, his name is not covered by the sacred precept. If, as appears

certain, the surgeon is eager and ready to take all the fees he can get from his private patient, how can he explain his readiness to work gratuitously for a corporation, which has money to invest in bonds and stocks, and to loan on security? The honor of giving medical services for nothing consists in the charity bestowed, if virtue is its own reward. Surely no person will have the temerity to assert that there is any charity in the methods of the hospital as conducted to-day. The surgeon is, then, justified in demanding salary from the governor, nor should he blush while making the demand. The governor should have taken the initiative, but he did n't and he won't; we will take occasion to remind him that he is doing an injustice, not only to his surgeon, to ask, or rather compel, him to work for nothing, the circumstances of compulsion being known to others than the governor and his staff.

While working for nothing for the hospital, the surgeon is unable to give his best labor to cases coming to his hands, from the fact that he is weary and worn by his efforts at the hospital for the governor; for, be it remembered, a surgeon's capacity for usefulness has its limitations, so has a steam boiler, so has the driving-wheel of a locomotive; to be perfect they must have periods of inactivity; to do their best work they must have intervals of repose, to restore molecular displacements incidental to activity.

There is at this moment deep-rooted and wide-spread dissatisfaction among physicians and surgeons on hospital and dispensary staffs, that custom and pride have so far warped their judgment, and shaped their destinies to drudge and toil for the best years of their lives, and when overtaken by age and compelled to lay down the burden, their only earthly reward is honorary mention by their master, the governor, as faithful servants. While the echoes of these plaudits are resounding through the corridors of the hospital, new men are installed in their places, who gambol with mirthful glee, under the benignant and patronizing smile of the governor, at the anticipation of feats to be accomplished and victories

to be won ; later, when the collar of the corporation begins to tighten around their necks, they look askance at their patron ; later still, they recognize that they have been euchred by the governor who held the joker.

The immorality and injustice of hospitals and dispensaries in looking for free services from physicians, who have only their profession as a means of support.

There was a show of reason in asking the surgeon to work for nothing in other days ; then the hospital was in swaddling clothes, struggling to make ends meet. It asked, and received, aid from humane and kindly disposed persons, amongst whom was the physician ; things went very well then. At that time the hospital practically consisted of the medical staff, the governor (not the autocrat of to-day), a superintendent, and auxiliaries, who were of his creation. Since then things have changed for the worse. Now the hospital has pulled away from, and broken faith with, its benefactor and founder, until he has nothing whatever to say in its councils or management. This man, the doctor, who was so instrumental in making the hospital an institution of importance, is practically put under restraint, and told that if he is not satisfied with the rules and regulations of a board who know little or nothing about medical matters, he can go about his business—be dismissed ; true, his dismissal is couched in guarded and diplomatic language, but the inference, nevertheless, is plain, that because he has not done better he must go, to make room for one who will.

Cautious business methods, and the free service of high-class medical talent, have made the hospitals rich, and have provided them with facilities to go into the medical farming business on an extensive scale, hiring out medical talent by job lots, to suit the occasion or the customer. Now, what have they done with the immense accumulation accruing through the generosity of the surgeon and the dollar-a-month annex ? Simply extended their operations by further building and equipping palaces, called private rooms to attract him

who has large sums of money to spend, and who will spend it, on the specious pretext of the governor that he offers him more superior facilities than his own private physician on Fifth avenue, who charged him an exorbitant fee for an operation for appendicitis he could have done at a very modest sum at his, the governor's, hospital.

This surplus the governor has accumulated through the generosity of the medical staff, who walk his wards every day in the year without a nickel for their valuable services. Has the governor, the factotum of the hospital and its spirit and genius, expressed appreciation of their constant and faithful services, by presenting them with a part of the money he was able to save through their kind and generous efforts? No, nothing of the kind; but, on the contrary, he has been an active agent in organizing forces to cripple and disable them.

The injury the free service has wrought for the private patient, who is able and willing to pay for medical services, as well as for the pauper in the dispensary ward.

Since it has been proved that the surgeon on a hospital staff cannot give his best work to a hospital corporation and his private patient at the same time, one of these two must suffer. The writer will assume they both suffer, as the hand of the overworked surgeon will lose its cunning and his tired brain the judgment necessary to guide that hand.

Now, why do two human beings suffer, and why are they victims of inferior surgical work? Simply because the surgeon has not time to give the care and attention necessary for the requirements of each special case; he is in a hurry, and must move on; the patient in the hospital must wait until the afternoon; the telephone will fix that with the governor.

The surgeon returns in the evening; the patient desiring his aid is in the autopsy room; the pathologist wants to know, forsooth, something irrelevant to the immediate facts of the case, so he is there with his knife and his note-book

for a specimen and a precept. The surgeon has injured that man, because he was not prompt in the morning to take steps to save his life, as he has injured his private patient by going to his bedside at midnight with nerves unstrung, after high tension an hour before while performing an operation for the governor in the amphitheatre. There, perhaps unconsciously, in the glare of the electric light and the presence of keen and discerning critics—the house staff and nurses—he exhausted his energy and shattered his nerves. He hastened to the bedside of his patient at midnight, with the prestige of the hospital heralding his coming, but he got there a tired man, and not at all able to cope with that case. The hospital authorities were morally wrong in looking for free service from that surgeon, and he made a mistake in giving his service to them; he made the mistake of the man who went to the fair to sell his donkey, on his way there he tried to please everybody whom he met, but failed signally in his purpose, and lost his donkey in the bargain. It is certain the surgeon does not always please the governor by his hasty exit and his failure to appear on schedule time in the staff room. It is also certain he has not pleased his private patient by requiring him to wait hours, until he completed his task for the governor, which probably meant three or four capital operations that day. It is conceded that the surgeon had a legal right to bestow his professional efforts wherever and whenever he saw fit, but the morality of his judgment is questioned when it is known that it is daily injuring a number of sick, outside as well as inside the hospital.

Working for nothing, often not profitable to either the giver or receiver.

Thirty or more years ago, we recollect it well, the city of New York had what was known as a volunteer fire department. Those constituting that department were brave men and true, ever ready to risk their lives in the service of the city. For this service the city paid them nothing but the granting of a few minor privileges, as freedom from jury and

militia duty. It appears the city pleaded poverty, as the hospital does now, and apologized, as the hospital has not, because it was unable to give the men cash equivalent for services rendered. The brave men toiled on, as the hospital surgeons do now, animated by pride, patriotism, and charity; but it came to be known that these men imposed on themselves a task, greater than they could bear, namely, working for the city for nothing, and at the same time, endeavoring to raise families depending on them for support. The result of this noble effort was that they were unable to do these two things well. The fireman was unable to occupy two places at the same time, so he failed to protect the city and his family.

The city was slow to recognize these facts, but finally concluded to pay him, just as it pays its judges and janitors, with the result now that his family is better protected, and so are the interests of the city. Then, the city was only half protected from fire, as the hospital is now only half protected from disease and injury by the kind of medical service wrung from the visiting staff by their master and ostensible patron, the governor.

Retrospection with the illusion vanished and the situation recognized.

The old notion, that surgeons and physicians should work for nothing for rich corporations styling themselves hospitals and wearing the trade-mark of charity to beguile the unwary, is about exploded. Able surgeons are now refusing to be cat's paws for these hospital corporations, to draw their chestnuts out of the fire. This work of chestnut roasting for the governors has occupied a large part of the time of our ablest medical men for years past, at a great sacrifice to themselves, their families, and their friends. Now, they have found out that the honor of being in the governor's service, and working in the cause of quantum charity, has not recompensed them for their slim bank accounts and broken-down health, when they retire, or are turned out of the cor-

poration's employment. At the parting, they give him no money, but bid him good-by, call him a faithful servant, and point to a reward in another and better world for his fidelity to the hospital corporation in this.

Now, these words are flowery, but they have no purchasing power for the retiring physician who needs money, their market value would n't buy a package of toothpicks. The governor's smooth talk is all right, and good enough in its way, but it does not cut any ice, now that the medical profession have cut their eye-teeth and recognize exactly where their interests lie, as well as the governor does his. Already, a noted surgeon, Dr. Gerster of this city, has thrown down the gauntlet and bearded the lion in his den, in an able article in a recent issue of the *Medical Record*; he has exposed the methods of the governor and the miserable mess he has made of hospital service in his efforts to operate a gigantic mercantile plant like the modern hospital, on a charity basis. In this article the imposture is apparent and the inference plain, that the governor has done a grievous wrong, not only to his visiting staff, but to his patients in the ward.

According to this very careful observer, three things are to be noted in the hospital service of to-day: That the patients are neglected, and often ill-used by being compelled to wait hours for the coming of a member of the surgical staff while suffering from injuries where immediate treatment is of the first importance; that young men called house-surgeons undertake too often to perform operations that should better be left to the judgment and skill of the visiting surgeon; that in the face of these facts, and while loud and constant protests are daily made by the press and public, the governor is impassive, serene, and happy. No doubt his happiness will vanish when he realizes the situation which confronts him.

The handwriting on the wall and the peril to the governor.

To-day the hospital staff is all but in mutiny, because of its treatment at the hands of the man it so implicitly trusted.

They see that he sells their labor, which they understood was to be given free to the worthy poor and those in immediate need, for a paltry sum in an establishment specially fitted up for that purpose and known as the dollar-a-month annex. The chicanery and hypocrisy of the hospital governor are apparent to all, in this, his new rôle to make money out of charity. This governor promised to be the custodian and guardian of their labor; he has broken his promise, is unfaithful in his stewardship, and unfair in his methods of distribution of this magnificent bequest. Now comes the strain on the cords that bind him to his staff and the parting of the ways. The retrospection for the surgeon is pregnant with unhappy memories; he is sorry now that he consented to work for nothing for the governor, and would gladly leave service to-morrow if he were certain that his place would not be filled by another who was a victim of ambition and the charity fever, like himself. He recollects, that he has not lifted his finger or made a call on a private patient where he did not have a reasonable expectation of a reward for his services; he recollects, too, and with poignancy, that he was not willing to turn on his heel without a fee for services to be rendered outside the walls of the corporation plant to which he dedicated himself without first making inquiry as to what was in it for him, nor was he willing to consult with a brother practitioner professionally without demanding a fee; often beyond the means of the patient. While his brain is on fire with these unhappy reminiscences, he is goaded and stung to further recollect where a family hurried and scurried to meet his exorbitant demand, or no operation would be performed, to the consternation of the patient who was suffering and the discomfiture of the family doctor who stood by, wondering why he, the surgeon, toiled and labored with a tireless industry for a rich corporation for nothing, and drove such a hard bargain here with a family in distress, yet willing to give him their all. He was not satisfied with this all, he wanted more and more.

The cup of his bitterness is filled, and the season of discon-

tent is on him, as he ruminates and tries to reconcile the past with his conscience. But how can he, who has for years given professional services freely to a corporation which did not need them, and refused the crumb of professional effort to a suffering man who has offered him his all, make peace with memory? The story of the good Samaritan now flashes through his mind and overwhelms him with despair. The agony is over, the resolution is taken and written in ink that will not fade, that from now and forever he will treat his private patient with more candor and concern, be more prompt and lenient in his consultation with brother physicians, and that he will use his best efforts and endeavors to compel the hospital corporation to pay for professional services rendered, as do less pretentious but well-disposed and law-abiding citizens.

The college professor and the general practitioner. Their relation to each other, and how that relation contributes to the abuse of medical charity.

A peculiar feature of the inquiry into the cause of abuse of medical charity is, its revelation of the fact that the medical colleges are either actively opposed to, or stealthily engaged in obstructing the path of, the investigator; they have, time and again, refused aid when such was solicited, and said they were very well satisfied with the present order of distribution, which should be left as it is. This course will be considered a peculiar one when we recollect that almost all the professor has and owns has been obtained through his touch and relation to the physician.

The medical colleges are willing to profit by the doctor, but not at all willing to make him a partner in those profits. There may be a cause for this course; maybe the toga of the professor is sacred, and should not be soiled by sordid and worldly interests—perhaps he lives in an atmosphere of intellectual exclusiveness far above the common herd who annoy him by calling him brother.

For this piece of impudence on their part, he has decided

to leave them severely alone, to work out their own salvation as well as they know how. If they have battles to fight, let them fight them; if they have victories to win, let them win them. Now, the medical profession would be perfectly satisfied with this statement of himself by the professor were it true, but it is well aware that such is mere pretension. The professor does not live up to his high idea of himself, for we see him coquetting with millionaires at every opportunity for an endowment, a perpetuity, or a new site for his college.

This professor, we have proof, manifests indifference toward the welfare of a poor bankrupt medical brother who only recently graduated from his college with high hopes and great expectations. In all truth, he cares little for that class to which he so recently handed a sheepskin, and to which he spoke in well-rounded phrases, with great unction and gusto about a propitious future.

One day a poor medical hack, footsore and weatherbeaten, knocked at his door in "the Tenderloin;" the professor did not know him, did not care to hear his story. He was in a hurry to deliver his lecture. The class was expectant and waiting. It was on jurisprudence, he said, and the subject was, "The Certainty of Success." The physician, with leaden footsteps, turned from his door in silence; he perceived that the professor's whole make-up was in marked contrast to his suave and patronizing air of the old classroom days. He is staggered by the professor's curt and frigid manner; his heart frozen by the rebuff, his mind is active, and brings him back to other days,—days of '88, his graduation year. His class numbered one hundred. He remembers it well. Commencement day was bright, and the band was playing. He ate heartily that day of the fruit of anticipation, but the realities now freeze his heart. How he remembers that day! Since then he has kept a diary, as he was anxious to chronicle the history of his class, the class of '88. The diary reads: "Twenty-five of my class were buffeted about by the winds of adversity and washed away by the human tide at its flood, in their early professional career,

beyond the vision of the chronicler. Thirty are scattered throughout the country, subsisting as medical guerillas and bushwhackers, trespassers on the domain of other physicians by invading territory acquired through legitimate patient effort." "These medical guerillas," the diary goes on to relate, "have, hanging from their belts, as trophies of war, the scalps of professional brothers whose kindness of heart lent them aid in an hour of distress. These pirates organize dispensaries, free surgical infirmaries, institutes of medicine, remedy companies, etc.; enlist the sympathies of rich men, who are led to believe that atonement can be made for their shortcomings of the past by posing as the patron-saints of these new medical crusaders. Pastors can be had for the asking to pour benedictions on the enterprise, and plead with an indifferent Providence for a successful future. Ladies will smile on these projects from the balconies of a fashionable hotel, or over the counter of a charity bazar. Their pleasant and innocent falsehoods are related about the value of inferior merchandise by glib and pious female tongues, but since it is done in the name of charity, angels who are looking down weep, and wash away the crime in tears."

The diary continues: "Thirty of the class are living from hand to mouth, making desperate but honest efforts to keep the wolf from their doors, and shoes on their children's feet. Ten of this class are in comfortable circumstances, and have some dollars laid away for a rainy day, acquired through talent, social environments, and other auxiliaries, which contribute so materially to success. One is lecturer in the mother college, one a vice-president in a public school, while two are utility men and stop-gaps filling alternately vacant medical chairs where it pleased Providence to cast their lot." The diary proceeds: "One solitary member of this class is an unqualified success; he rises high, and traverses alone the rarefied atmosphere above. So proud is the professor of this aëronaut of space, that he can be seen of clear days on the roof-garden of his laboratory, watching with strained eyes and eager interest this solitary member of the class of

'88, who took his flight to fame." The diary, proceeding, affirms that "his affability and affection for this member are remarkable. He is prominent as a platform attraction on Commencement and other important occasions. He is invited to teas, presented at faculty meetings, requested to occupy a chair in the college, which he declines; all the faculty and trustees are assiduous in their attentions, and eager to cultivate his acquaintance." This ends the diary, and the history of the class of '88.

Seeing the disposition that has been made of this class, which started out with such high hopes, we will now endeavor to ascertain whether the dean professor did his duty, his whole duty, to this memorable class to which he bade "Godspeed" ten years previously, and whether he has improved in his system of teaching from that day to this.

In the medical colleges, nowadays, there are chairs for everything, from the boxing-master to the bacteriologist, the noted exception being the chair of medical ethics. This chair has reposed in the garret in close proximity to embalming fluids and cadavers for ages. It should be taken down forthwith, dusted off, and made the most conspicuous chair in the college, for on it will depend largely the success of the future graduating class. True, there is a one-armed grandfather's chair there, a sort of make-believe affair, which is filled often by a supernumary or superannuated member of the faculty. This chair is known as that of medical jurisprudence, but the name is only a misnomer and misfit, since no one ever heard such doctrine propounded or preached from it during the memory of man. That chair always has been, and is to-day more than ever, an incumbrance and a nuisance, and, in the opinion of the writer, should be mustered out of service at the earliest possible opportunity to make way for one that will teach and instruct without the confusion and muddling so well known to, and characteristic of, the old chair of so-called medical jurisprudence.

A hint to the dean as to what he might teach in this new chair of medical ethics may be appropriate here; he should

lay down as the law and gospel of his creed, that proficiency and expertness in his chosen calling are only a part of the outfit of a successful career. There are exceptions, of course, but, as always, they only prove the rule. His knapsack may be full of the elements of knowledge, but the chair of medical ethics we are anxious the dean should found, must instruct his class in the application of that knowledge. A sabre or a pistol is a useful article to the wayfarer if a bandit or a wild animal is lurking in his path, but they are of little value if he is not acquainted with their use, and are often of more serious import to him than to the object of his attack.

The application of acquired knowledge, and knowledge as the result of experience, are essentially different. The dean should so instruct. The one is reflected from one object to another; the other, sensations acting independently on the object.

The chair of ethics will be constant in fixing in the minds of its students the practical side of life. It will tell them of a great world outside the classroom, a world eager to make a living and save money, and one they should understand and be in harmony with, in order to be successful themselves. That to instruct, they must be willing to be led, and to lead, they must be willing to follow; that the world is full of pitfalls, to escape which they must move with circumspection and caution, learning, as they travel along, to protect their own interests, and at the same time to respect the rights of others.

It might also be well for the dean professor to instruct modestly that he has no monopoly on brains; that his school is only a part of a system of intellectual distribution which has its ramifications in all quarters of the habitable globe.

The chair of ethics should be sure to so instruct its class of young doctors, being, as they are, so prone to glorify their professors at the expense of other and most worthy individuals who do not happen to belong to a faculty, but who, nevertheless, are most excellent physicians.

This new chair of prudence and anticipation should

further give the class to understand that success can only be attained by constant effort and great sacrifice of time and labor, and that honesty and singleness of purpose are prime factors in the race.

If the dean professor so instructs, the graduating class of 1900 will make a much better showing than did the men of '88 in the melancholy and miserable exhibition recorded by one of them in the diary just read.

If the chair of ethics impresses these precepts and fastens them permanently in the minds of its students, they will go out into the world to seek their fortunes armed with stamina and pluck, without which other qualities count for little. It is well known that "the fast horse seldom wins a race" but the stayer with the bottom, will come up like a whirlwind from the rear, forge his way past the fast ones, now worn out, and be first at the goal. The inspired writer had a thorough appreciation of this fact when he exclaimed, "The race is not to the swift, nor the battle to the strong."

This chair of medical ethics will find a lively interest as it enters heartily into the spirit of its work, and the lucky occupant will look back on the time when his chair was unknown, to recognize that a shadow obstructed the light of by far the most important source of instruction, namely, that engaged in the difficult task of instructing young men in the judgment, tact, and discretion necessary to the successful practice of their chosen profession.

As the dean and faculty ponder, they will, indeed, be astonished that this chair was permitted to remain covered with dust and repose in a garret, while some useless ones were given conspicuous places. The dean will undoubtedly ask his brothers of the faculty at an evening tea or a social hop why a subject of such far-reaching consequences and vital importance to the student was omitted from the college curriculum. They will be of one opinion, that such omission was remarkable, more remarkable still from the fact that, so much was taught to the young doctors about things they will have no earthly use for after they emerge from the class-room.

These poor students so filled with the food they cannot digest or assimilate, will, when freed from the restraints of the class-room, unload this undigested mental pabulum, fed so plentifully, so regularly, by the paternal hands of their professors, upon an already long-suffering public. These professors, before the advent of the chair of prudence, discrimination, and industry, were as silent as the grave about a subject of the first importance to their charges, those whose education and training were intrusted to their care, namely, how to use the knowledge they imparted in order to be most beneficial to the sick man who looks to his physician for succor, and to himself who looks to his successful treatment of this man as a means of support.

The more the learned professors examine and ponder this great question, the more astonished they will be, that it was reserved for this late day, and for the writer to point out that it should be established as a college institution.

On medical societies, their number and relation to each other.

At present to be a member of a medical society brings no responsibility or care beyond signing the by-laws, and paying a small sum as yearly dues. Do this, and keep aloof from undue notoriety, and you are insured membership indefinitely. Of course, membership brings no pecuniary reward, but it gives what is known as a standing in the profession, with all that this implies.

Attendance at the monthly meetings is not necessary, nor indeed at all times desirable; in consequence of this liberal interpretation of the by-laws, the duties of a member are merely nominal. The societies are under the control and run by a very few of their members; these few devote a great deal of time to that purpose; their chairs are seldom vacant meeting night; they are known as leading members, and with good reason for they really lead, endowed by nature with qualities not possessed by the rank and file,—temerity, intensity of application, and what is known as force of character; they may be lacking in many things, even in clinical

experience, but their other qualities overshadow and dominate all. Occasionally a clique, by intrigue and sharp practices, finds itself in control of a society, and it is unscrupulous as to the means used to prolong its power. From time to time these cliques turn up, for the elements of which they are composed are always latent in every society, and only wait for an opportunity to come to the front; these cliques exercise a power for evil in the society, and injure the profession at large, since they use their power to stamp out independent thought, and crush opposition. The men in the front rows are generally the hustlers and pushers, who have something to say in meeting and know how to say it; they are brave of heart and strong of nerve, lions of the house of Judah. In marked contrast to them are the timid men who sit in the back seats; it happens sometimes, though, that the timid man in the rear who listens can give cards and spades to the hustlers who run the meeting, and yet outpoint them on varied and valuable clinical experience, but as a sheep before the shearers, he is dumb, and opens not his mouth.

As a rule, the same set of officers control the societies year in and year out, in season and out of season for long and often indefinite periods, occasionally for their natural lives. In consequence of this state of things, the same old faces greet the visitor year by year, and the same old voices ring the change; the same old officer, once a president, now a censor, and in time to come, a treasurer. The monotony and regularity of this change is as remarkable as it is constant.

What occupies the society's time during its monthly deliberations.

The reading of the minutes, then perhaps a eulogy on a conspicuous dead brother, whose place it is so difficult to fill, but filled already, though so recently dead. Now comes the presentation of a pathological specimen by a scientific brother, of, he thinks, more than usual interest, or the exhibition of a new instrument, of no particular value but of curious design, by some young and ingenious inventive mem-

ber of the learned assembly ; then an arid paper on some subject which has already been worked to death by previous explorers, by a brother who is sure he has light to shed and ideas to scatter in the crowd around him, who are hungering for intellectual food, and eager for the banquet he has spread. Again, another brother, charged to the neck with a laudable ambition to go down on the records as an investigator and laborer in the field of scientific thought, reels off something from the dry matter-of-fact web of clinical observation always on tap at these meetings, with an occasional new discovery thrown in, to illuminate the personality of him who emerged from the fog of medical speculative philosophy ; he comes to the meeting like Moses from the Mount in awful, solemn grandeur, bearing his new discovery, not on tablets of stone, but sealed in a bottle or enclosed in an iron chest.

On opening his precious burden before eager and jealous eyes consumed by anticipation and the hope of a brother's discomfiture, his discovery evaporates into thin air, blasting his cherished hopes and dampening the pent-up enthusiasm of the gathered assembly.

After these matters are disposed of begins the real work of the session, which consists of papers, queries, and answers about the public health, something to preserve that health and improve the hygienic conditions, to strengthen the heart and tone up the stomach, so that the people can live on to the centennial period.

During these discussions excitement often runs high, and though a member should drop dead from exhaustion and heart failure, so interested is the august assembly in its work, that it will not deign to take cognizance of the unfortunate event ; their interest in the hygiene and longevity of the dear public is touching. We have the key here, to why they are so eager to pay their bills, and so punctual in meeting obligations, and why they never speak disparagingly of their physician when he was unsuccessful in his effort to accomplish an impossible task.

The influence of the medical societies on the practice of medicine.

The medical societies exert only a meager influence on medical practice ; contrary to what is generally thought, they neither shape the course nor control the policy of the medical fraternity either inside or outside the city. The general practitioner, even if he is a member of a society, can in a majority of cases snap his fingers at his society, and tell it to do its worst, as his offense is down in the by-laws as no offense at all, and that it must prove him guilty—a thing that it seldom tries to do, and if it does, almost always fails. It takes votes to reach a verdict, generally a two-thirds one at that, and on examination, the offender is found to have sympathizers and friends in unexpected quarters. Then the authority of the societies is the merest indeed, and has but the most nominal kind of sovereignty over the action of the physician. Again, the by-laws are so clumsy and intricate that loop-holes are always found, and it is almost impossible to convict a delinquent of an offense. For this reason the societies are full of rebels and malcontents, who from sheer cussedness often throw their influence on the side of a flagrant offender.

One of the causes that renders a society so negative in influence, is, that there are too many of them, as instance, about twenty-five or thirty medical societies in Greater New York, when one or two would answer all requirements, with, if necessary for accommodation, twenty-nine branches ; then influence would radiate from the center to the circumference, whereas now it is reflected from several little centers to where the wind listeth. It might accidentally touch the desired point,—chance is the only factor in the scale.

These twenty-five or thirty medical societies, all of which unfortunately are more or less jealous and covertly hostile to one another, have not a common purpose ; unless it is their antagonism to each other. They exist ostensibly to promote medical scientific investigation, watch over the public health, and benefit themselves as little as possible. The

savage who mutilates his body to propitiate the gods, and the Hindoo who plunges into the Ganges for the same purpose are as rational and logical in their deductions from the data at their hands, as are our medical societies of to-day. It can be seen at a glance why so little is accomplished by this multitude of little societies, the elements of which repel each other.

The variety and extent of so-called respectable medical advertising.

This subject we approach with some little hesitation, but our story would be incomplete with its omission. We refer to the system just come into vogue among young physicians emerging from hospital service, of sounding their own trumpets and advertising themselves as graduates of this or that hospital, alumni, class of such and such a year; this they have the bashfulness to print with office hours conspicuously in a medical directory of nomenclature and address which circulates widely among the profession; they gazette themselves in this book, and say modestly, "After we graduated, we entered service in a hospital for further instruction in the practice of our profession."

Now, what object had this physician in proclaiming himself grandiloquently about his hospital course? Most undoubtedly, to convey the impression, that he was better qualified to engage in the practice of his profession than some other medical brother, presumably, one who had not the benefit of such a course. As a matter of fact, he may be more skilful and better equipped to wrestle with disease than his room-mate and classmate at college who had not the benefit of such a course, but it is bad taste for him to say so, and savors a little of quackery; he had better stop the practice at once. If he has superior attainments, he will outstrip his room-mate who lacked his advantages long before the home-stretch is reached, and keep the lead to the end. If the young man, who so proudly gazetted himself as an alumnus of a hospital, embraced the opportunities for acquiring

knowledge which that institution offered him, he was lucky in his first and infantile step towards standing alone on the threshold of perhaps a successful career.

While taking a pride in his success, he should remember, that there are vast fields for clinical observation outside the walls of his hospital, that these fields may have furnished material for his room-mate as they did for him. The teachers and professors he idolizes, for want of a wider field for his mental vision, and other pabulum than the nursing bottle of his alumnum, acquired most of the clinical knowledge they possess through subjects furnished from tenement districts—a land teeming with every form of human infirmity, and ever ready to furnish choice specimens of the various stages of development of any given disease.

Now, what is to hinder the alumnus of the crowded tenement district, who sees four times the number of sick seen by the young man confined to his hospital ward, if he makes proper use of the material at his hand, from being as apt in diagnosis and as competent to anticipate a case of scarlatina, diphtheria, or variola from prodromic symptoms as the alumnus of Mount Carmel, Mount Cisco, or some other hospital? We know of nothing. If a young man is naturally dull and slow of comprehension, and possibly he may be both, and after all, pass a successful examination for admission to a hospital as a retentive memory and a season of cramming are the prime essentials in such examinations, he will exhibit these characteristics inside as well as outside of his medical protectory.

After one looks at this subject without prejudice, and with an honest desire to ascertain the facts in the case by sifting the mass of rubbish that generally hampers every form of investigation, since human nature is prone to follow the direction of old landmarks, to flow through old channels, and to see only what it wishes to verify, he is forced to the conclusion that doctors are not made in medical schools, or graduated from hospitals, but are to the manner born. No matter what care and grooming is given to a truck horse, he

will not develop into a fast trotter,—that characteristic exists in the matrix or cell; the protoplasm must contain or propel the energy which may be hereditary, or transmitted at the period of copulation.

About the craze of the medical profession to affix titles to their names.

This must be a subject of deep concern to all who have the interests of the medical profession at heart; the craze of the doctor of to-day to have himself dubbed as a professor or lecturer somewhere or other—any place is better than none, if it were only to go in and lecture to dry bones in a graveyard, or to trees in a forest—the name of lecturer, only the name. It will give him an opportunity to write about something he does not understand, and, by prefixing professor or lecturer, have people read it. If it could be professor of practice or professor of surgery, so much the better, but, as was said before, professor of anything is better than nothing. We really must make him professor of something or other, somewhere, anywhere, to a Barren, a Blackwell, or some other island, otherwise he will pine away and die.

Once upon a time, traveling in Kentucky or the Carolinas, about every second man one met on the highway was a colonel or a brigadier-general. To-day, in the city of New York, and doubtless in other cities of the Republic, every other doctor one meets in the streets or the sick-room is a professor or lecturer in some hospital, infirmary, or dispensary. It may be further observed in looking around, and visiting the haunts of the doctor, that the younger the physician, the more likely is he to be a professor. Take up a journal, a provincial one preferred; there it can be seen that most of the articles are decorated at the top by professorships, honorary degrees, etc. This rider the writer displays at the head of his article, probably because it had no other merit to recommend itself to the reader, or he may wish by it to draw away the reader's attention from the neighboring article by some medical man who made no pretension to be anything more than a plain

doctor, a recorder of facts and experiences as they presented themselves to him.

It is foreign to the writer's intention to do anybody a wrong, or to strike at honorable and manly effort on the part of any member of the profession to which he belongs; that should be their ambition, as it is their privilege and their right, and no man has a right to ask them to desist from such honorable purpose as to lead in their chosen calling and run in the race for honors in the greatest of all professions; but he does object, and very decidedly, too, to hippodroming, the backdoor entrance, and other underhanded and crooked work in the race for place in the grand medical handicap to which we are all subscribers, and in which so few of us are beneficiaries.

The policy that should be pursued by the city authorities through their Board of Charity and Correction.

It is doubtful if there is any department of the city government more important than the Board of Charity and Correction, but it is, and always has been, for some reason, accounted of minor importance by the city authorities, and is handed over by the victorious political party to some man who knows little or nothing of the duties of the office he is called upon to administer. In consequence of this, mistakes are very likely to occur, and do occur, in his official administration of the office. No matter how honest and well-intentioned he may be, it will not affect the situation, as he has to look for guidance to others, who may be interested parties. With this state of affairs, the situation is not improved.

The problem of charity can be simplified, however, and brought within very narrow limits; only the needy should be recognized as objects of medical charity. The simple fact that they are in need can be considered, and their immediate wants supplied, while the most rigid examination is being made as to their fitness and right to make a claim on the appropriations that the city, in the fulness of its heart, dedicated to charity.

No private institution or hospital should be allowed one

dollar from this appropriation for charity; private hospitals and private charity schools have no right to ask for money from such appropriation. It appears that they do so on the plea of helping the city authorities to facilitate and solve the problem of charity. If they wish to maintain hospitals and schools of medical charity, let them do so on their own resources and individual efforts.

It appears, also, that these so-called semi-charitable concerns have to comply with certain conditions and restrictions before becoming eligible as beneficiaries of city funds. The city should never have entered into an alliance or compact of any kind with any institution over which it did not have exclusive jurisdiction. The spectacle of hospitals and petty, so-called charitable concerns running around lobbying and intriguing for funds and angling for appropriations for their own special institution, is not pleasant or inspiring. The argument so sententiously and ingeniously made that they are taking a load from the city's shoulders by their special efforts to maintain these hybrid institutions has been proved time and again to be illogical and illusive.

These institutions existing under the plea of charity are often run for personal motives, or to satisfy the spite or ambition of some self-constituted faculty of medicine, or the morbid and unhealthy amblings of the board of guardians of some school or dispensary, the existence of which was not a public blessing, and the extinction of which would not be a public calamity.

It has been seen only recently where an institution of the type just mentioned made frantic efforts to satisfy some condition imposed, in order to qualify and be deemed worthy of a city appropriation. The secretary of that board, being an honorable man, did not consider the means employed to establish the claim of worthiness to be exactly in the line of fair dealing for men who make a show of respectability and wear the livery of charity, so he protested, first privately, then publicly. For such protest his course met the disapprobation of the president of the institution, who called a court of in-

quiry, consisting of the faculty and presided over by himself, which promptly found the faithful guardian of the public interests guilty of an infraction of the by-laws, and removed him from a chair to which he was an ornament; but, in doing so, it only enhanced a reputation which was already high in the regard of his fellow-citizens and the esteem of his medical brethren.

A thousand examples of the squabbles and intrigues of people masquerading in the garb of charity, but eager to feed at the public crib, could be cited here if time and place permitted. The importunities and impositions of these hypocrites should cease, and would, if the city withdrew its aid altogether. It should never be lost sight of by the authorities, that they are the servants of the people—honored public servants. The assumption of their fitness and honesty was conceded in their election.

It is the duty of these servants to consider well the interests of the people who place them in power; to throw away the money of taxpayers by supporting institutions that have demonstrated their inability and unfitness to be vehicles and conduits in the distribution of public charity, is not a good way to recompense the people for the honor they conferred in calling them to high station.

More circumspection and keen inquiry must be made in the future by the Board of Public Charity to determine the fitness of those applying for alms, and this inquiry must not be made behind closed doors, but in the clear light of open day, and under the gaze of an enlightened public opinion. Any man or woman applying to any public institution for charity in the way of food or medical treatment should not be ashamed to let the fact of his or her necessity be known to the general public; any secrecy in this matter is prudish, and can benefit nobody, but, on the contrary, can injure not a few.

The policy to determine the worthy from the unworthy, to sift the wheat from the chaff, should receive the sanction and approbation of all. The worthy seeker after any form of char-

ity, especially medical charity, should not be ashamed to insert his or her name in a book of record, kept at the desk of the dispensary or hospital whose aid they solicit. If they are not able to read, or write their names in this book, their mark should be acceptable, while all the information possible should be carefully gleaned and chronicled as to their previous positions, habits, and character. This book of record should publish its list of paupers officially every week in some daily paper selected for that purpose. The city hospitals should be compelled by law to pursue this course. By so doing they will protect the worthy poor, and the long-suffering taxpayer as well. No fair-minded person will complain of a system like this; certainly there will be some croaking by cranks and interested parties about hurting people's pride, and publishing one's business affairs to the world, but of this it may be said that pride and poverty make poor room-mates, and it may further be said with candor that a person applying for charity has no business affairs.

This simple mode of procedure will drive off the unworthy, for only they will be affected by its application; then, professional mendicants and persons with bank accounts who apply for medical charity will find their efforts frustrated and will be compelled to live by honest methods and pursue practices more in consonance with justice and humanity. Those mendicants will be prevented from taking advantage of charitable institutions by soliciting alms, selling the same forthwith, and placing the net proceeds on the credit account of their bank-books. It will also relieve the congested condition of the diamond dispensaries, and give the overworked (for no pay) doctors employed there a chance to recuperate from the chronic dyspepsia which those unfortunates have contracted by eating a hasty bite, under the delusion that they are in the service of charity, while in reality, in many instances, they are only the creatures of a mendacious constituency, and the bondsmen of a set of men constituting a corporation who operate in the name of charity, but whether their motives are selfish or otherwise, are sapping the industry of the

nation and paralyzing the business interests of the community at large.

By pursuing the course pointed out, the bank president will bid good-by to the diamond dispensary and go back for treatment to his family physician, and the wily, but often well-to-do, denizens of the tenements may pay up arrears to the physicians in their neighborhood, when confronted by publicity and their signature in the book of record kept at every dispensary and clinic, and published weekly for the information and inspection of the people and taxpayers.

Summary of medical abuses and the means to be employed to abate or remove them.

It was necessary for the writer to describe and discuss separately the principal causes contributing and leading to the abuse of medical charity; when these causes are connected by the coupling-pin of common sense, the train of circumstances will lead directly to where is found the key to the solution of this vexed question.

From what we have learned of the methods of the hospital governor, we know he will not budge one inch from the position of covert hostility and underhanded dealings that has made him stand out so conspicuously on the field of medical observation. We see the governor day by day providing himself with means to handicap and impoverish the physician, and what makes it worse still, he has the temerity and hardihood to use his visiting staff as this means; in fact, he has made it a bludgeon to beat the physician into abject submission and unconditional surrender. The staff itself would rebel at the use to which it is being put, did it not desire to avoid an issue which it was certain would be disastrous to itself in its present condition of unpreparedness.

We see the governor bellowing to the rich invalid through the medium of his spacious apartments so elaborately prepared, as we see him bidding for the dollar of the working-man through the agency of his dollar-a-month annex in close contact and touch, but more sumptuous than his dispensary,

which he artfully employs as a feeder to this now notorious annex.

This move of the hospital authorities to make money out of charity was a blow that should have been resented, and would, were the visiting staff sure of the support of the profession as a whole, but there was no guarantee of such support, as the hostile attitude of a portion of them—an inconsiderable portion, it is true, but enough to make an issue—shows, thereby precluding the possibility of success.

If the hospitals can be compelled to pay their visiting staffs salaries commensurate with the valuable services rendered, the rich private patient up-stairs and the dollar-a-month establishment down-stairs will speedily become matters of the past. With such a state of affairs, the hospitals would not be losers, for those who now refuse to contribute even a quarter would open wide their pockets, as soon as the injustice to its staff ceased, a thing which not an inconsiderable number of the people resented.

The college authorities' neglect or faithlessness.

The colleges were found to be apathetic and indifferent about their distribution of charity; true, it is desirable that they should have material for clinical observation, as the student has his cadaver for anatomical purposes, but they should invite and choose the needy and deserving, of which there are not a few, in preference to the wealthy and well-to-do, who now seem to be in the majority at college clinics. The preference for so-called respectable people at their clinics is of itself sufficient to encourage the very form of abuse of which complaint is made. These various hospital clinics are held ostensibly for the benefit of the outdoor sick poor, but a peculiar feature of the case is that no poor are to be seen there; they are ashamed to come, so marked are they in contrast to those who are in the habit of patronizing the consultation rooms of these college clinics.

It appears from facts gleaned in reliable quarters that the poor are not wanted there, as their presence might drive away

the rich, to whom the professors and chiefs of clinics have become so attached. The rouge and fragrant perfume of well-dressed ladies, and the debonair and patronizing air of the gentlemen who throng the halls of their clinic, are more acceptable to the eye and agreeable to the olfactories of the professors and their contingency of assistants than the rags of the poor woman and the malodor of the perspiring sick laborer out of work.

It is difficult to reach the doors of the clinic of one of these colleges sometimes, from the jam of equipages ranged around the buildings; one can see colored liveries; caparisoned steeds with armorial crests caper and prance while their owners are inside consulting on their ailments, and it is most remarkable with what courtesy and polite bows they are welcomed by the professors and their aids.

It was noticed that when one or two poor persons summoned courage to edge their way through the well-dressed throng, they were received with frigidity by the professor, a cold formality by the chief of clinic, and with indifference mingled with disdain by the assistants standing around; so marked was this that the poor people felt their position keenly, and determined never to go back.

This noted, or notorious, dispensary clinic was well nicknamed the diamond dispensary. Now, where do the poor, who are not welcome at this diamond dispensary, go for treatment? They are crowded back on the tenement districts and department of city charity. There is an overflow. Where will it go? To the medical sharks and guerrillas of Dean Goodenough's class of '88, thirty-five per cent. of which went wrong because he, the dean, and his college associates were remiss in their teachings; the thirty-five per cent. of the dean's class which went astray are prepared to accommodate the poor who were turned out of the diamond dispensary clinic because they were not well dressed, did not wear diamonds, nor smell of fragrant perfumes.

These sharks of the class of '88 do not care as much for odors as they do for dimes, so they are ready to treat the

refuse of the rich dispensary. These mountebanks of the dean's class opened dispensaries on the avenues and side streets, almost one on every block; they are smooth of manner and glib of tongue, and experience no trouble in enlisting church fairs, pastors, and missionaries, to help them in their charitable undertaking and labor of love to the stricken and afflicted who crowd the tenement districts. The medical charlatans who organized these dispensaries are as a rule unskilled in their profession, but sly and foxy, and the clergymen who aid to keep them afloat are short-sighted enthusiasts who seldom recognize that there may be something other than charity hidden in the project.

These medical vagabonds of our cloth are, as was remarked, graduates of Dean Goodenough's college, and it is not creditable to him that their hands are raised against every honest practice; that their faces set in the direction of rapid and unscrupulous advancement; that they have axes to grind and pennies to collect, and do both with the aid and enthusiastic endorsement of the good pastor, who in a number of cases lends the mountebank his study for an office and his Sunday-school room for an out-patient clinic.

A flood of light is thrown on the situation by the diary kept by one of the dean's class of '88—one not a success in his profession, it is true, but still one who knew how to keep a diary. It can be seen in the light of this diary how foolish and shortsighted are the college authorities; how they have sown the wind, and the profession and people have reaped the whirlwind through its avaricious and ill-trained graduates. We see further, where half the dean's class of '88 headed straight for the rock-bound shore. They would not have done so had he and his associate faculty instructed them about currents and variations. If the dean had provided them with a nautical almanac in place of the tawdry college catalogues he weighed them down with, and marked on his chart the danger points—the currents they were liable to encounter while on their maiden cruise in search of fame and treasure, the disaster of shipwreck might have been prevented.

Had he given his class proper sailing orders and put into its hand sealed instructions, to be opened after the glamour and the enthusiasm of the early hours of the voyage had passed away, wherein they might have learned that industry and integrity are the parents of success; that while it is not philosophy to anticipate the ills of life, it is its essence to bear them with resignation and fortitude. Because the dean failed to properly instruct his class, the physician failed in his life-work, and the medical profession reaped a harvest of poverty. When the diamond dispensaries drive away the rich and well-to-do people, and open wide their doors to the worthy poor, who alone have the right there, the day of the tenement-house fake dispensary prosperity will cease and the medical jackals doing the penny-in-the-slot trick will be compelled to find other fields for their ingenuity and cease preying upon a profession to which they are a disgrace.

The want of cohesion in medical societies prolific of evil; singleness of purpose and unity of action the hope of the future.

We see the physicians of Greater New York cut up into numerous little societies, ranged in irregular lines, and pulling against one another, each watching the other and casting furtive glances of disapproval over his shoulder at the apparent advantage of his neighbor.

These little societies throw away great opportunities while wrangling between themselves about, after all, questions of really little moment, thus becoming an easy prey to interested parties outside who slip in and carry off all the honors and emoluments. Among those who benefit by these dissensions might be mentioned conspicuously the hospital governor and the medical guerrillas of Dean Goodenough's celebrated medical college.

The money a practitioner invests in the five or six of these medical societies to which he often belongs is practically thrown away; the sum is small to be sure, and would not buy a railroad ticket to Chicago and back, but nevertheless

it is money lost, for really it brings him nothing in return. If he runs foul of the law, and gets into trouble, which sometimes happens to the best intentioned and most circumspect physician, the societies to which he pays his money will coldly turn their backs on him, prejudice and condemn him before trial. The member of his society who shook his hand so heartily only yesterday, to-day chuckles and laughs slyly at the prospect of a spicy trial, and takes pleasure in bandying around gossipy bits of news that have no foundation, in fact, but which seriously affect the reputation of his fellow-member and physician.

The physician, who is a member of six societies is now forsaken by all;—no meeting hastily summoned to help a brother in distress; no word of kindness to lighten the gloom that has covered this man's character like a shroud; no, nothing of that kind. He is left to himself to sink or swim, and often would sink were it not for the helping hand of the Samaritan, who happily passed by.

At their meetings, we see the medical societies deeply interested in topics of a clinical nature, and talking by the hour on subjects that have small practical value. Since its members cannot always live on manna and wild honey, the question of other support is sometimes brought before their meetings, but it is quickly suppressed by the gavel, ruled out of order, and side-tracked as irrelevant to the object of the meeting.

Other learned professions, among which may be mentioned law and art, have features in marked contrast to ours; their natural leanings are to a common centre and a blending of interests and homogeneity of purpose foreign to us; they are not ashamed to let the world know that they have stomachs, and that they can work better when the needs of these stomachs are supplied; they don't blush as do the members of our picayune societies when some hungry brother brings up in meeting the bread and butter question. This unfortunate brother is voted out of order because he had the hardihood to turn the attention of an august and scientific

assemblage to the vulgar question of appetite; an assemblage, some of whose members have not the price of a bed and breakfast, but who yet make true and willing sacrifice to an obsolete and now ridiculous feature of old-fashioned medical etiquette.

Those other learned bodies while entertaining others have one thought firmly fixed in their minds, and that is, how to devise ways and means to maintain themselves while introducing and unfolding the high possibilities of their art or profession. Our medical societies have no such thought; each of them has ideas positive, and is unwilling to relinquish them for the benefit of the whole. No rule of equity, business, or etiquette is applicable to all, no guiding hand to point the way to common interests; each member and society is so weakly assertive as to preclude such possibility.

A significant fact that may be mentioned here is that the Bar Association of this city, a society of lawyers wielding immense power and wide influence, is the mouthpiece of the legal fraternity within wide area. When that oracle speaks, it speaks with authority, and is listened to with respect and deference by all. The voice of this association shapes the laws in our legislative halls, and admonishes the judges in high place to administer them with intelligence and fairness. What is the secret of its power? Simply this, that it represents the intelligence of the united legal brotherhood of the city. It is a piece of perfect mechanism composed of an infinity of parts. These parts comprise the individual membership which fit into each other with such mathematical nicety, that the result is a perfect whole.

Under the guidance and influence of this association, sanctioned by its legislative and executive governmental departments, the city provides legal counsel for the poor man when his life or liberty is at stake, but the Bar Association sees to it, that law schools have no charity clinics where is given away legal advice to whomsoever comes along with a pretense that he is poor, since before any notice is taken of such application, it must be accompanied by proof

of the most positive kind that the subject seeking aid is just what he claims to be.

If the lawyers were divided into cliques and small societies, without common aim, and with no purpose, they would be in the same pitiable plight to-day as is the medical profession, but this humiliation has been spared them, because they have but one pilot; he gives the sailing master his steering orders, treacherous shoals are avoided, and the port is reached in safety. Sad for our profession it is, that we have on board of our majestic ship about thirty pilots, who are all eager to take the helm, and in the scramble to get it the ship drifts with the current wide of her course.

This scramble of the pilots has continued so long, that the ship is now on dangerous shoals and can only be saved if the pilots are thrown overboard and a navigator is found among the crew, a thing possible and probable, as the crew now recognize danger ahead.

The twenty-five or thirty societies of Greater New York with their captains and pilots must box their compasses and range themselves in single file under the lead of one man. That man at the head of a united profession would wield the same influence in medicine that the Bar Association does in law. This one medical society would be a terror to evil-doers, and a power for good in the medical world; it would enlist under its banners all the recruits who were worthy to bear arms, leaving only pretenders and impudent quacks, who alone would be available for the hospital governor, if he further persisted in demanding free service from physicians and surgeons at his hospital and dispensary clinics.

Away, then, with the little societies, most of which were born into the world to be spinning-tops and playthings for medical chums to amuse themselves with. The hope of the future in medicine is the gathering together in one representative body of the respective elements of which it is composed. Then common interests will be protected, injustice punished, and faithfulness and true worth receive a fit reward.

SENILITY.

By F. W. HIGGINS, M. D., of Cortland County.

October 20, 1898.

“To old people, dyspnœa, catarrhs accompanied with coughs, dysuria, pains of the joints, nephritis, vertigo, apoplexy, cachexia, pruritus of the whole body, insomnolency, defluxions of the bowels, of the eyes, and of the nose, dimness of sight, cataract, and dulness of hearing.” This is Hippocrates’ catalogue of the ailments of old age.

Aside from the morbid conditions of which it may be considered the cause, senility is an important factor in every case in which it is present. In any surgical operation, it is a matter for consideration. As physicians we meet with its effects daily; it is endemic everywhere. Charcot calls it the normal disease.

What is old age? To the physician it is not a matter of dates but of physical condition. Some are physiologically older at sixty than are others at eighty. How many of us have seen a white-haired woman, almost toothless, face wrinkled and pallid, with form bent, step short and uncertain, and trembling hands—and been astonished to find her less than sixty years old!

Old age is not a question of years; it is not determined by the grayness of the hair alone, nor will it do to measure it by the feel of the temporal artery. Cazali’s statement that “a man is as old as his arteries” is too short a phrase to contain the whole truth of so large a theme.

We cannot properly define old age until we have formed for ourselves some adequate concept of life itself. This is confessedly most difficult. According to Herbert Spencer, life is continuous adjustment of internal relations to external relations. Senility from this point of view would be a lessening of this capacity for continuous adjustment.

Or life may be defined as a constant balance between assimilation and disassimilation. Old age, then, is characterized by diminished assimilation. In growth assimilation exceeds its opposite. An organ in which assimilation is retarded is senile. That there is lessened metabolism may be shown by an examination of the urine. In middle life the amount of urea to one kilogram of body weight may be stated to be 0.41 gm. In old age it falls to 0.13 gm. If we accept these definitions we find that a failure in ability continuously to adjust itself to environment is one factor in senility; the other is diminished assimilation.

But old age is a process taking place in each individual cell. If we would learn the secret of senility, it must be done by the aid of the microscope. "A cell is not nourished; it nourishes itself." When the ability to absorb and utilize the pabulum presented to it flags, then that cell has passed its meridian. In the struggle for existence going on among the somatic cells, such an ill-nourished cell must sooner or later go to the wall. Diminished vital resistance and diminished assimilation are both signs of obsolescence in cells.

Of the cells entering into the composition of the body, some can reproduce themselves indefinitely. Of these the connective-tissue cell is the type. The most highly specialized cells can reproduce themselves scarcely at all. So when a nerve or muscle cell dies, its place is taken by one of connective tissue. As traumatic lesions are replaced by scar tissue, so the traumatisms of disease, during the course of life, destroy muscle cells or gland cells that are never restored, but are replaced only by the lowly organized connective-tissue cell.

Tillmanns states that in the liver after a contusion a traumatic growth of connective tissue occurs, so that in a case observed by him only two months after such an injury there was in many places no longer any normal liver parenchyma to be seen. The repeated shocks that come during a long life may be considered the equivalent of a severe traumatism

by an accumulation of their minute traumatisms. There may be more than a fanciful analogy to the crystalline changes occurring in the inanimate iron of a car-wheel, which is rendered useless after being on the road a certain period.

Old age, then, begins in primary cell elements. After a long continuance of the replacement of the parenchymatous cells by adipose and fibrous tissue, the result becomes manifest in a microscopic section and we call it fibrosis of the organ. This is the essential of old age. The liver is called cirrhotic; the kidney, gouty; the joints are said to be affected with nodular rheumatism; in the lungs Sydenham called the process *peripneumonia notha*—in these days it is termed senile asthma; at the neck of the bladder occurs hypertrophy of the prostate; in the brain there is an increase of the neuroglia; in the heart there is fatty degeneration; in the middle ear there are deafness from thickening of the tympanum and anchylosis of the ossicles. Yet it is in the walls of the blood-vessels that the most important though the less striking changes take place. De Menge examined five hundred senile cases microscopically, and found endarteritis in all. At first these changes are occult; but soon in the cells of the intima of the minute blood-vessels, apparently from the irritation of some peccant material in the blood circulating through them, a degeneration of the normal serous to fibrous and fatty cells takes place. An extension of the same process to the muscular coat follows, with the resulting thickening of the wall, diminution of the calibre, and hindrance to the normal blood supply. If these minute blood-vessels are *vasa vasorum*, then senile degeneration of the walls of the larger arteries nourished by them takes place, and atheroma or its equivalent is found. A rich train of the manifestations of senility originates from this factor. Atrophy and softening of the brain from lessened blood supply, apoplexy from a broken weak vessel, and gangrene of the extremities arise in this way.

There are also breaking down of the alveolar partitions in

the lungs and senile emphysema; thickening of Glisson's capsule; and amyloid, fatty, and calcareous changes everywhere. Another sequel is weakness of muscle, which gives rise to such diverse symptoms as presbyopia; dilatation of the cardiac ventricles and the arch of the aorta; dilatation of the hollow organs, as the stomach and bladder; torpidity of the bowels, with constipation and all its chain of evils.

It will be noticed at once that the pathology of chronic alcoholism presents an almost identical chain of lesions. There is the same fibrosis—the same tendency to atheroma. The acute observation that “for the alcoholic the years count double and triple” would indicate that the effects of old age and of alcohol on the system were the same, and each intensified the other.

Infective diseases lower the coefficient of vitality and so cause premature old age. We have seen this markedly illustrated during the past few years by the grippe. Syphilis and slow metallic poisoning also have a similar pathology. Indeed, the analogy is so close as to lead to the inquiry whether old age also may not be due to an intoxication.

One is certainly justified in asking this apparently absurd question, if it be true that the microscopic changes found in old age are identical with those produced by alcohol, the toxin of syphilis, or the products of defective metabolism in the gouty or rheumatic subject. The term toxin of old age sounds ridiculous, but, after reading Bouchard's monograph on auto-intoxication, it appears slightly less so. If in the normal organism sufficient toxins are daily elaborated to cause death if not eliminated by the kidneys and liver and lungs and skin, it becomes comprehensible how the system may become clogged by the ashes of its own fires.

The analogy to some of the lower organisms is very striking. Yeast plant is immortal; it buds and grows as long as the alcohol produced by it is removed. But fermentation stops when the product of its own growth reaches twenty per cent.; that is, senility of the cell occurs. In the same way the product of vital activity in every cell in the body is

toxic to that cell, and acts slowly only when elimination is comparatively perfect.

Striking examples of the changes taking place in a tissue from deficient elimination, and one open to daily inspection, are the various catarrhs. The loss of function, fibrosis, and final atrophies in nasal catarrh are all senile changes.

Does the study of the pathology of old age give rise to any indications for treatment? For general senility, no. We cannot by any general or local treatment get rid of the cicatrix of a burn. No more can we by treatment replace the fibrous cells of a worn-out tissue with new parenchymatous cells. Mercuric chloride has been thought capable of dissolving atheroma and fibrosis by its alterative action, but the claim is doubtful. Arsenic, in popular writings, is said to be capable of temporarily rejuvenating an old man, but physicians do not find that its rather mysterious powers extend so far. Brown-Séquard's testicular juice was much talked of from the fame of its propounder, but no one seems to have taken its recommendation seriously.

But there is a practical side of the question to physicians. If senility cannot be treated, senescence can be. If general senility is not, in the strictest sense, a disease, partial senility is so. If normal senility is not frequently brought to the attention of the physician, he is to combat and prevent premature senility.

If we are to avert partial senilities, it is necessary that we shall early recognize the organ that is breaking down. If this is done by regulating the habits of life, by decreasing the amount of work required of that organ, by increasing nutrition, the balance may be partially regained. If we cannot bring the organ up to the level of the rest of the organism, then we must follow Fothergill's advice and level the other organs down to it.

Oliver Wendell Holmes, the poet, must have been also a good physician to have portrayed so accurately the idea of old age by the chaise in which "every part was made as strong as the rest," and at last—

“ . . . it went to pieces all at once—
All at once and nothing first,
Just as bubbles do when they burst.”

But if we are to recognize which organ is most likely first to fail in our patient, we must go back to the old study of diathesis, which the French alone now consider worth attention. There are the *laxus*, which grows fat in old age, and the *strictus*, which withers up. One would expect to find sluggish liver more frequently in the former class, a cirrhotic kidney in the latter. The *scrofulous* and the *arthritic* are to be differently defended against the dangers of premature senility.

In the *scrofulous*, cells are ill adapted to resist the invasion of disease from outside. The lymph stream is sluggish, antitoxins are not quickly developed, the soil is favorable for the growth of germs. These are more liable to the accidents of disease. One feels more anxiety with a surgical patient of this class.

The *arthritic* is more subject to vicious influence from within. Such a patient has developed antitoxins against tuberculosis, typhoid, and diphtheria, but dies of auto-intoxication. Here you may expect chronic rheumatism and persistent eczema. Here the fibroid changes are sure to occur. Our hope is that important and vital organs may be spared. The various *cachexias*, which have been defined as acquired diathesis, are equally important to notice.

We are taught that in the treatment of acute disease we must know in which direction lies the danger of death, and conserve that organ. In our middle-aged patients we should also know whether premature senility is attacking the heart, the lungs, the kidneys, the stomach, or the brain, and prolong their lives in accordance with that knowledge. The treatment is largely hygienic, and follows naturally from a clear conception of the condition. Our patient must not eat too much, and proper elimination must be constantly maintained. They need less meat, but are to eat more milk and cereals, as befits second childhood. Alcohol is more apt to

do harm than good. There must be fresh air and exercise. There must not be sudden changes in temperature or altitude or habits. Medicines must not be too strong. Many old people have come to their death by a dose of morphine that would be moderate in middle life. A compound aloin pill may be required daily.

We must not look for the reaction symptoms in the old that we are accustomed to see in the same disease in earlier life. A pneumonia in a child is ushered in by a convulsion, in an adult by a chill, in an aged person by no symptom at all. Old persons do not have so much pain with biliary calculi, so much vomiting with cancer of the stomach, so much variation in the tendon and pupillary reflexes, so much systemic disturbance from diabetes, or so much elevation of temperature in fevers.

In our surgical cases a study of senility is equally valuable. We operate on the very old with good results, but on the prematurely or partially senile we must observe great caution. In the old we are especially careful to have the operating-room well warmed and to avoid excessive loss of blood. In a fractured hip we attend to the general condition of our patient more than to the position of the limb.

Summary.—The essential of old age is the replacement of parenchymatous cells by connective-tissue cells. This is caused by the destruction of the higher cells by accident, or, which is more usual, by toxins produced by the organism itself. Premature or partial senility should be recognized and treated.

TECHNIQUE AND USE OF SALINE INFUSIONS.

BY THOMAS F. REILLY, M. D., of New York County.

October 20, 1898.

Since the physiology and pathology of the organism have become better understood there have been frequent attempts to influence its morbid conditions by direct medication of the blood.

In the earlier efforts blood itself was used, and successfully, to combat the anæmia of hemorrhage; but the difficulties attending its use were so many and the dangers so great that it could never come into general use. Milk was tried, but the results were not satisfactory. Although the use of the saline solution by intravenous injection is recorded as early as 1832, it is only since 1878-'81 that its value in hemorrhage has been generally recognized. Even now, despite the fact that its wide range of usefulness has been so thoroughly established, it is very seldom used by the general practitioner. In some quarters the fear is expressed that there will be difficulty in getting the solution to flow into the vein; in others that some dire evil will result should even a single bubble of air find its way into the circulation, and, like other remedies thought to be difficult of administration or dangerous in use, it is often delayed until all hope of success is futile.

Methods. The methods by which the solution is introduced are: (1) The direct (intravascular); (2) subcutaneous (hypodermoclysis). Under the direct may be included (1) intra-arterial, (2) intravenous. The technique of the intra-arterial method is practically the same as the intravenous, except that the solution is injected toward the periphery.

Dawbarn has successfully used a modification of this.

method, which consists in injecting the solution into a large artery through an aspiration needle thrust directly into the vessel. On account of the danger of sloughing attending its use the intra-arterial method is seldom employed. Of the other two methods, the intravenous injection has the wider range of usefulness. For direct results, for speed and painlessness of the procedure, it is easily preëminent. Furthermore, in toxic conditions, when a depurative action is desired, the subcutaneous method is unsatisfactory, owing to the fact that after the tissues have taken up a certain quantity of the solution, absorption ceases, for at time, at least, and this cessation cannot occur when the solution is introduced directly into the vein.

In advanced cardiac disease, when the additional strain on the heart would be too great, or whenever a sudden rise in the blood pressure is likely to be attended by serious results, the intravenous method is contraindicated, and resort must be had to the other method.

However, if any prejudice exists against a skin incision, and where haste is not a factor, the average physician will still prefer the subcutaneous method.

For subcutaneous use, an aspirating needle, attached to a Davidson syringe filled with the solution, is plunged into the loose connective tissue of the abdominal wall, the axilla, or, in females, under the breast, and the solution pumped in. In lieu of a Davidson syringe, an ordinary fountain syringe, elevated about six feet, will answer. Another valuable substitute, suggested by Dr. H. H. Kelley, is the reversed aspirator. For this purpose the solution is placed in the jar of an ordinary aspirator and air is forced in, displacing the solution. In whichever way the solution be administered subcutaneously, not more than from 6 to 10 ounces can be introduced in one place, and for that reason many punctures are necessary. The pain is not so severe if glycerine or carbolic acid be added to the solution (Mathieu). No accidents appear to have followed this method, as not even an attack of cellulitis is recorded against it.

Inasmuch as the intravenous method is regarded as a formidable operation by the majority of physicians, more attention will be given to its details. The apparatus commonly employed for this purpose in the hospitals of New York consists of a glass funnel connected by a piece of rubber tubing three feet or more in length to a cannula about four inches long by one eighth inch in diameter, curved for about an inch at its point, to facilitate its introduction into the vein; it is generally provided with a stopcock. The method commonly employed is as follows:

The forearm is placed in supination. After thoroughly cleansing the part a bandage is tied about the middle of the arm so as to distend the veins. An incision an inch long is made at the bend of the elbow, over the median basilic or cephalic vein, whichever is the more prominent. The incision is carried through the skin and fascia. With a groove director the fat overlying the vein is torn away and the vessel raised from its bed. Two catgut ligatures are next passed beneath the vessel. The distal ligature, in the lower angle of the wound, may now be tied, but it is better to wait until the vein has been opened, because of the uncertainty sometimes arising as to whether the vein is *really* opened. The vessel is opened by a clean-cut longitudinal incision about three eighths of an inch in length, and the cannula is inserted about half an inch in the direction of the venous flow. The other ligature is tied closely about the vein and cannula, thereby securing the latter in position, and the bandage taken off. When the cannula is removed this last ligature is tightened and the skin may be united with proper sutures or left to heal by granulation. When it is probable that a second injection will be needed, the tube may be clamped and the cannula allowed to remain. Although it would seem that under such conditions clots would form and be forced into the circulation by a subsequent injection, yet this method has the approval of many eminent surgeons.

A modification of the above method devised by the writer and practised in a considerable number of cases, certainly

has the advantage of simplicity and rapidity. It is as follows: The forearm being in position, cleansed, and a bandage applied above (1), a short superficial incision is made over the vein (2), an ordinary uterine tenaculum is quickly worked down alongside of the vein, then turned upward, and after being brought out on the other side of the vessel is left hanging, thereby raising the vein and controlling any excessive hemorrhage during the operation. The vein is immediately incised and the cannula through which the solution is dropping is inserted. When enough of the solution has been injected and the cannula withdrawn in case a ligature is not to be had the tenaculum is removed. A bandage will control any hemorrhage. By this method it is possible to have the solution entering the vein within thirty seconds. The only instruments requisite are a scalpel and tenaculum (Sims) and a transfusion apparatus. For the latter a piece of rubber tubing three feet long with a douche bag at one end and a cannula will answer as well as the more elaborate apparatus. In lieu of a cannula, an aspirating needle, a goose quill, or better still, a medicine dropper, will answer the purpose. If the action of a stop-cock be desired, it may be imitated by allowing the solution to flow for a few seconds and then to close the tube with a pair of artery forceps or with the fingers until the cannula is in the vein. During the infusion the funnel is held about an arm's length above the point of injection; whenever possible the entire apparatus should be sterilized. At any rate the cannula should be clean. The outline of the vein can be made more prominent after the bandage has been applied by alternate flexion and extension of the wrist. The right arm is preferable because the veins are a trifle more prominent. When both of the veins mentioned above are too small for the cannula, although such a condition must be very rare indeed, the dissection should be carried on an inch or so up along the inner side of the arm to get the basilic vein, at the same time avoiding any injury to the internal cutaneous nerve as it crosses at this point. Some surgeons

prefer the saphenous vein where it crosses the malleolus. In extreme cases where the superficial veins cannot be made prominent the suggestion has been made that a transverse incision be made across the forearm to pick up the open vein. One of the common causes of failure in this simple operation is the neglect to remove the bandage tied about the arm for the purpose of distending the vein. I have known this to happen in several instances, and all sorts of reasons concerning blood pressure, etc., given as the cause of the failure to get the solution to enter the circulation. Another fault is the pushing of the cannula between the coats of the vein. This can best be avoided by a clean incision about three eighths of an inch long. A sharp-pointed cannula is very much more likely to cause this result than a blunt pointed one, and furthermore even when such an instrument has entered the lumen it is apt to make a second puncture. Avoid any force in the introduction of the cannula, for when the point of the cannula has once entered the lumen of the vessel, unless great disproportion exists between the size of the cannula and the vein no force is necessary to accomplish its complete introduction. If force appears to be needed it is more than likely that the point has caught in the tissues of the vessel wall and that the force exerted, instead of pushing the cannula farther along the lumen of the vein, is tearing the vessel wall and doing damage to the surrounding tissues. In the ordinary method so much time is often spent in adjusting ligatures, etc., after the vein has been raised from its bed and before the cannula is inserted, that the vein has become partially collapsed and reduced to a mere ribbon. Especially is this result likely to happen if the distal ligature be tied before the venous incision is made.

When this occurs it is better to cut the vein directly across and tie the distal end. A clamp should then be put on about an inch above and the vein raised out of its bed for this distance. The proximal end is then lifted up and after distending the orifice with a probe, the cannula is

inserted and the clamp removed. When the superficial incision has once been made it is advisable that the position of the arm should not change as there may be trouble in locating the vein again.

Fallacies as to Air, etc.—Contrary to the general opinion there is very little danger to be feared from the introduction of small quantities of air into the circulation. On several instances I have seen a cannula full of air accidentally introduced with no evil results. The experiments of Hare, Senn, and others prove this assertion beyond the slightest shadow of a doubt. In one instance, Hare injected 40 cc. of air into the vein of a dog, so that most of it went directly to the heart, without any evident effect upon the blood pressure. More recently McClintock has shown that from 1,200 to 1,400 cc. of air may be introduced into the jugular of a horse and no harm done. Although unquestionably all solutions should be filtered, in at least two instances personally observed, small particles of dust, etc., did not occasion any disturbance. A little absorbent cotton in the bottom of the funnel will answer as a filter in an emergency.

Preparation of Solution.—In the preparation of the solution various additions have been made to the simple salt solution. Some formulæ, as that of Hayem, contain an alkali with the intention of more nearly approximating the chemical constitution of the blood serum. Others, as that of Ringer, contain in addition a salt of calcium which is said to have a direct coagulating effect upon the blood. But Bosc and Vedel (4), as a result of a series of elaborate experiments with the various solutions, come to the following conclusions: distilled water is noxious even in small quantities; ordinary water, non-toxic, not very destructive to the red corpuscles, and might be used in an emergency; simple salt solution quite innoxious so long as the quantity of salt does not exceed three times the quantity of sodium chloride, normally contained in the blood; artificial serum not superior to salt solution of 7-10 per cent. The strength of the solution in general use varies from 6-10 to 8-10 per cent.

In the preparation of a solution of 6-10 per cent., 92 grains of ordinary table salt are added to a quart of water. For ordinary purposes two small teaspoonfuls not heaped up will approximate the requisite amount (a small teaspoonful of salt brushed off with a straight edge weighs from 40 to 45 grains). The solution, after the addition of the salt, should be boiled and filtered. If it is to be kept for any length of time it should be protected by cotton plugs to keep out dust, etc. In hospitals double or quadruple strength solutions are constantly kept on hand so that the normal solution may be quickly prepared by the addition of simple hot water. The temperature of the solution should be about 100° . It is better that it be a degree or so warmer when put into the funnel, as it will lose about a degree in passing through the tube. An increase of a few degrees is not a matter of consequence, and many surgeons now advocate the use of solution of $105-110^{\circ}$ on account of their greater stimulating effect. The experiments of Athansin (5) prove that in animals, at least, solutions having a very high temperature, $165-175^{\circ}$ F., can be safely used. I have found that a solution of approximately the proper strength and temperature may be obtained by adding a pint of boiling water to a quart of solution containing 138 grains, or two large teaspoonfuls of salt, this later solution being at the room temperature of 60 to 70° F.

Where no account has been kept of the amount of solution injected it may be useful to remember that under ordinary circumstances it requires about five minutes for a quart of solution to run in. The quantity requisite ranges from a few ounces to several quarts. The chief guides in any case will be (1) the return of the pulse with increase in volume and diminution in rate; (2) return of color and facial expression or perhaps consciousness. Rarely more than two pints are needed at one injection, but the injection may be repeated many times on the same patient. Enormous quantities have often been used, and generally with the happiest results. In one case recorded twelve pints were injected during an operation, and Lejars mentions a case where

twenty-six litres were given in five days. There is very little danger of putting too much of the solution into the circulation, especially in the anæmia following severe hemorrhage. Derske and Faye showed that an amount of solution equal to four times the quantity of blood an animal possessed could be safely injected. Wiggin, however, mentions a case of a patient with a weak heart in which an injection of three quarts, rapidly given, so overburdened the heart as to cause death. Where large quantities have been used and the patient does not regain consciousness, it is well to see that the bladder is not distended, as sometimes the amount of urine excreted is marvelous.

Use.—The most widely-known field for the employment of the saline solution is in the anæmia due to hemorrhage. Inflet and Leffort (6) in 1878 were the first to suggest its use in this condition. Since then it has been the resource of surgeons the world over in the treatment of this form of anæmia and with uniformly satisfactory results. The immediate source (13) of danger from sudden loss of blood is the fall of blood pressure to a point where the circulation cannot be maintained. The first indication, therefore, is to raise the pressure in the vessels. This the saline solution does by supplying a liquid capable of taking the place of the blood lost and also of acting as a stimulus to the vasomotor system. As an ultimate cause of death the loss of enough of the oxygen-bearing red corpuscles to arrest the respiratory function might be feared, but this need not cause us any concern, for it has become an established fact that in animals blood may be withdrawn until the heart and respiratory functions have ceased for some time, yet if one third of the blood remains in the system and a sufficient quantity of saline solution be introduced, cardiac and lung action is at once restored and the animal recovers. Furthermore, in pernicious anæmia the loss of red corpuscles sometimes amounts to as much as 90 per cent., yet respiration is not seriously impaired. But injection does more than restore the circulation, it has a decided hemostatic action.

In 1889 Pierre Delbert (6) observed the blood clotting directly as it flowed from the vessels, following an intravenous injection of saline solution, and his observations have since been confirmed. As an example of this hemostatic action the following is cited:

Rosie M. was operated upon for pyosalpinx. Owing to dense adhesions considerable hemorrhage followed, which could not, for various reasons, be entirely controlled. On account of the precarious condition of the patient the wound was packed and the patient put to bed. Two hours later she was still bleeding and was in a condition of collapse. The face was pale and covered with a cold sweat; the eyes half open and glassy, the pulse thready and rapid (160 or more), and the blood still continued to well out of the wound. An intravenous injection of two pints was given. The first result noticed was an increase in the tension of the pulse and a marked diminution in rate (80-90). The color began to appear in the face; the eyes regained their lustre and consciousness returned; but more important still the bleeding ceased. About half an hour later the patient had a short, sharp chill, fully recovering some time later.

The theory (6) has been advanced that it produces this hemostasia by exciting the contraction of the arterioles and a migration of the hematoblasts from the hemato-formative centre. These are destined primarily to replace the blood lost by hemorrhage, but arriving in a serum yet rich in fibrin they are precipitated and form the nucleus of a clot. Its twofold function becomes especially apparent in internal hemorrhages, such as hemoptysis and the hemorrhage of typhoid fever. It is advisable in these two conditions, unless there is immediate danger of death, to allow the fluid to run very slowly on account of the increase in blood pressure.

Shock.—In the condition of shock with its attendant vasomotor paralysis, the vessels are flaccid, the blood for the most part is accumulating in the large abdominal veins. The ventricles are practically empty and are deprived of sufficient blood supply and normal stimulus. The heart then contracts only occasionally. Drugs given either by the mouth or hypodermatically are of no avail, because they cannot be absorbed.

Something must be done to cause more fluid to enter the heart and thus keep up the flagging circulation, or death will shortly ensue. Nothing surpasses the saline solution for this purpose. Stimson (7) reports a number of cases of shock treated successfully in this manner. Three of his cases were accident cases, and when admitted to the hospital were in a condition of extreme shock. Spencer (8) reports several cases of shock occurring during cerebral operations treated successfully in a similar manner. Many other cases are reported by good observers, and their reports all seem to have this in common, *i. e.*, that they are all enthusiastic in its praises as a life-saving measure.

In the treatment of shock during an operation, Wiggin¹ advises that as soon as the pulse increases twenty or thirty beats per minute strychnia should be given hypodermatically until gr. 1-12 is reached, supplemented by glonoin. In case this does not control it, intravenous saline infusion should be resorted to at once. In his service at the city hospital it is resorted to upon the slightest indication, with the happiest results. Its good effects are visible on the day following the operation, inasmuch as these patients do not complain of the unbearable thirst that so commonly follows severe operations. Nor do they have the drawn, pinched expression so often observed under similar conditions. Whenever a patient to be operated upon is in a weak condition, it is a good plan to give the injection as soon as the patient is anæsthetized. In conditions of electric shock it is advisable to employ it, even though life seems extinct.

Uræmia.—Whatever our belief may be as to the exact causative agent in uræmic conditions, it has long been admitted that some toxic agent accumulates and circulates in the blood. Bouchard found that while it required 10 cc. of normal human blood to kill a guinea pig, from 3 to 6 cc. of blood from a uræmic patient would accomplish the same result. Now, as this agent is contained largely in the blood serum, the most logical sequence would be to get rid of as

¹*Medical Record*, Jan. 22, 1898.

much of the blood containing the poisonous agent as possible without directly endangering life, and then to dilute the remainder with some harmless agent. Such an agent we have in the normal salt solution. Furthermore, the saline solution has a powerful osmotic action on the kidney cells themselves and thus increases the eliminative processes (the researches of Bosc would indicate that its action is mostly manifest upon the cells of the convoluted tubules). In addition clinical experience has proved that as a result of its introduction into the circulation, diaphoresis and purgation occur, so that it fulfils all indications for treatment in cases of uræmia.

In one case of this kind where I had the opportunity of employing it, the effect was certainly remarkable. The history is as follows :

Ellen G., age 40, with a history of uræmic symptoms extending over five months, complained of a sudden blindness. A few hours later she had a uræmic convulsion lasting ten minutes. The urine contained albumen and casts; hot packs, diuretics, and purgatives were employed, and next day she was feeling better. Two days later, as a result of a nervous shock, she began to toss about in bed in a delirious manner. Fearing a convulsion, glonoin 1-75 per hyp., and chloral and bromide by rectum, were given at once. Ten minutes later she had a convulsion. She was put in a hot pack and pilocarpine gr. 1-6 given by hypo. Fifteen minutes later another convulsion occurred, followed in a few minutes by a third, when the convulsions ceased. The patient was now in coma. There was profuse salivation and œdema of the lungs, probably due to the pilocarpine. An hour later her condition was rapidly becoming worse, the face was cyanotic, respirations stertorous, skin dry, and pulse very weak and irregular. Ten ounces of blood were withdrawn and two pints of salt solution were introduced directly into the vein. The pulse now improved in tension and became slower, and her general condition was much better. Three hours later the pulse began to weaken and became rapid, and again reached 130. Another pint of the saline solution was given, and the patient began to rally. She soon regained consciousness, and from that time on progressed favorably.

The case is especially interesting in that it shows œdema of the lungs is not a contraindication to the use of the saline infusion.

Proben reports a case of eclampsia with total suppression of urine. Two quarts of the solution were injected, and within twenty-four hours the woman passed one hundred and nine ounces of urine.

Merlin (9) (Loire Med.) reports a similar case.

Porak has treated fourteen cases of uræmia with these injections, with but one death.

McBurney (10) reports a case of acute suppression of urine following removal of a large calculus from the kidney, that successfully responded to these injections.

Diabetes.—It is very probable that the good results obtained by Lepine in diabetic coma by the use of intravenous injections of salt and sodium bicarbonate are due more to their depurative and eliminative action than to any chemical change that may be supposed to take place, and so far the normal salt solution will answer as well. Garnier and Lambert (11) have succeeded in at least temporarily arresting the glycogenic function of the liver by normal salt injections, so that we may hope for more permanent results in the future in an otherwise hopeless class of cases.

Sepsis.—Within the past two years it has been heralded by the French writers as almost a specific in septic conditions, and the results would seem to justify their claims. The rationale of this treatment, according to Pozzi, who is its strong advocate, is that, in the first place, by raising the intravascular pressure it increases the patient's power of resistance, enabling him to carry on the struggle against disease. In cases of septicæmia the blood-making organs thus get time to produce new blood corpuscles for phagocytosis, and the kidneys with increased excretory powers, and eliminate the toxins.

Lejars and Michand (12) report its successful use in seven cases of peritonitis. Berrin reports a case of septic peritonitis as cured by its use. Monod has had seven cases with three recoveries, Michaux fifteen cases with five recoveries, and Duret (14) four cases with three recoveries.

Auge (15) and Buchanen each report instances of its use

in septic conditions. The latter in a puerperal case used six quarts at one injection, and believes it was instrumental in saving life. Tuffier makes a favorable report of fifty cases of septic conditions and hemorrhage, including two cases of tetanus. Duret (14) reviews the history of twelve personal cases, of which eight were cases of septicæmia, four post-operative, four puerperal, one case of severe shock, two of collapse from hemorrhage, and one of urinary infection. Of the twelve so treated ten recovered. Bertin (20)¹ reports the case of a woman septic for three days, the abdomen was distended and painful, with frequent vomiting. On the fourth day she seemed to be dying; two pints were injected. This was followed by marked cyanosis, and shortly after there was a decided improvement and the patient recovered. During the discussion which followed, Seyond, Pozzi, Bouilly, and others heartily endorsed its use in such cases, and speak of it as being constantly employed by them in all cases of grave septicæmia, with the happiest results.

Claisse (16), in describing the phenomena observed in these cases, says we find the patient suffering from a severe infection, all the organs working badly, temperature about 104° F. In ten minutes 1200 to 1400 cc. saline solution is injected. At once the patient feels better and reaction begins; usually the patient now enters on what is known as the critical stage, which comes on four to five minutes later. There is a violent chill sensation of extreme cold, strong, rapid pulse, and a rapidly rising temperature, 104° to 106° in an hour. About six or eight minutes after the chill there is a feeling of heat, flushed face, and labored respiration, pulse and temperature being unchanged. Water now makes its appearance in quantity through pores of the skin and kidneys. In three or four hours later the real improvement becomes manifest. The temperature sinks to normal and convalescence is established. In severe cases improvement is only temporary and the injection must be repeated.

One successful case of osteomyelitis with multiple abscesses

¹Soc. de Chir., 1896.

is reported by Lejars (17). Rau (18) reports a somewhat similar case.

Cholera.—The first application of its use in general medicine was to counteract the lowered blood pressure of the algid stage of cholera. It was used with great success in the Paris epidemic of 1884, and later in Hamburg, in 1892. Its two-fold action, *i. e.*, of washing out the poisons and supplying liquid, together with keeping up blood pressure, rendered it a most useful agent. Sahli reports its successful use in cases of typhoid fever, uræmia, and diabetes. Bosc has collected a number of cases of its successful employment in typhoid fever. In this disease its indications are the same as in cholera.

Pneumonia.—Bassi¹ reports its use in eight cases of severe double lobar pneumonia, with seven recoveries. He says the best time to use it is about a day or so before the expected crisis, or whenever the pulse becomes intermittent, or, in fact, upon any grave change in the patient's condition. Legnani (19) reports three successful cases of a similar character. Galvagni, Pellegrini (20), and Lejars also have had decided success from its use in this condition.

Purpura Hemorrhagica.—Feltz and Pigot (21) report a case of purpura hemorrhagica cured by its use.

Rau (18) has used it successfully in a similar case.

Ulcerative Endocarditis.—Dulchi reports its successful use in two cases of ulcerative endocarditis. In one case a litre a day was employed for five days.

Pyelitis.—Delbert has had good success from its use in pyelitis and he believes that the increased amount of urine washes out the pelvis of the kidney and also eliminates the toxins.

Carbon monoxid poisoning.—Brodier (22) reports the case of a man suffering from carbon monoxid poisoning (coal gas). He was in a comatose condition, the reflexes were lost, the respirations varied from 44 to 52 per minute. Nystagmus was present and the pulse feeble and rapid.

¹ Gaz. del Osped, No. 68, '96.

Oxygen inhalations and injections of ether were useless. As a last resort an intravenous injection of saline solution was given. This was followed by a chill, vomiting, and profuse diaphoresis. Improvement began at once. The injection was repeated in an hour, and his rapid recovery followed. Hueily, Bergman, and Fräntzel have reported similar cases. An editorial in *Presse Medicale*, June 12, 1896, after giving the history of several cases of mushroom poisoning, advocates venesection followed by saline infusion as the logical treatment.

A temporary amelioration was afforded in a few cases of grave jaundice mentioned by Delamare.

Tomalisoni (23) has obtained very good results from its use in extensive burns. In the course of his experiments on dogs suffering from extensive burns he found that if the saline solution was introduced they almost uniformly lived, otherwise treated they all died.

Alcoholism.—In the only case of acute alcoholism I have had an opportunity of employing it as a depurative agent, the patient, a chronic alcoholic, had been delirious for two days with a weak rapid pulse ranging from 140 to 150. A few ounces of blood were withdrawn and some of the solution injected. The pulse fell to 90, increased in volume, and the patient was restored to consciousness for a short time. Although previous to the injection death seemed imminent, she lived for thirty-six hours. At the autopsy nearly all the organs were found in such a condition of extensive degeneration as to preclude any possible chance of ultimate recovery.

Toxæmia due to colon bacillus.—In rabbits Vedel (25) has been able by the use of saline infusion to neutralize the toxæmia due to intravenous injection of the toxins of *b. coli. communis*.

Painter's colic.—Delearde reports five cases of painter's colic treated by subcutaneous injection of the saline solution. The pains soon ceased. Diarrhœa set in, lasting for two or three days, followed by rapid recovery.

Carbolic acid poisoning.—Landouzy in severe cases of carbolic acid poisoning advises bleeding followed by infusion of saline solution. Several unreported cases treated in the hospitals of this city tend to confirm this statement.

Tetanus.—Tuffier has had two successful cases of its use in traumatic tetanus. .

Epilepsy.—Monvet (24) and Viret as a result of extensive investigation of the urine in epileptics, believe that epileptic attacks are due to a critical accumulation of toxin in the body, and recommend the use of saline infusion as a depurative agent at intervals to be determined by the relative toxicity of the urine. In view of the fact that arsenical poisoning is always followed by a great drop in blood pressure, and inasmuch as the arsenic circulates in the blood, it occurred to the writer that a saline infusion would act as a diluent for the poison and keep up the blood pressure at the same time. A number of experiments were performed on cats, and while they were not sufficient in number nor conclusive in result, they made it certain that life can be at least greatly prolonged.

	Liq. potass. ar- senitis by hypo.	Time elapsing between in- jections and appearance of symptoms.	Time between introduction of poison and infusion.	Blood with- drawn.	Amount of salt solution intro- duced.	Effect on pulse of the saline infusion.	Length of time animal lived after poison was intro- duced.
I. Small cat.....	m xv.	4 minutes; restlessness.	None.	None.	None.	None.	3 hours.
II. Fair- sized cat...	m xy.	6 minutes; vomiting.	1 hour.	3 iii.	3 ii.	Not perceptible	2 hours.
III. Large cat.....	m xx.	6 minutes; restlessness.	1½ hours.	3 ii	3 iv.	Brought tension up to normal for about an hour.	8 hours.
IV. Large cat.....	m xxii.	4 minutes; restlessness.	1½ hours.	3 iv.	3 xxii.	Brought tension up to normal for about an hour.	7 hours.
V. Large cat.....	m xviii.	3 minutes; vomiting.	1½ hours.	3 ss.	3 xxxii.	Brought tension up to normal for about an hour.	9 hours.
VI. Fair- sized cat...	m xviii.	6 minutes; diarrhœa.	2 hours.	3 iv.	3 xii.	Pulse continued fair until next day.	48 hours.
VII. Fair- sized cat...	m xviii.	5 minutes; restlessness.	2¼ hours.	3 v.	3 xiii.	Pulse continued fair until next day.	Recov' red.

In every case the characteristic symptoms of arsenical poisoning, such as vomiting, diarrhœa, etc., were all manifest within twenty minutes. In two cases there was considerable blood in the stools. From a review of these cases it would appear that it is better to wait until all the poison has entered the circulation, in order that the full effect of the solution can be obtained.

Many competent observers believe that the rôle of increased temperature is a conservative factor in diseased conditions, and assert that it stimulates the production of antitoxins. The experience of Elfström with the use of heated blood in pneumonia seems to indicate that the action of heat does more than simply attenuate the bacilli. The universal rise in temperature following saline intravenous injections, the chill, the crisis, and the marked improvement that follows, all seem to indicate that antitoxins in sufficient quantity have been produced to temporarily, at least, neutralize the toxins. Surely the salt solution *per se* could not accomplish this result. It seems to me that we can account for part of this beneficial action by the fact that the solution is usually introduced at a temperature several degrees higher than that of the blood, and that probably the increased heat stimulates the production of the antagonistic principles.

Finally in summarizing we may say that in general its indications are :

1. In all cases of severe hemorrhage whether external or internal.
2. In shock both simple and post-operative.
3. In all toxæmic conditions, and here it should follow venesection. Indeed no agent thus far compares with it in effacacy in uræmic and septic conditions.
4. In cases of poisoning due to vegetable or mineral substances.
5. In any pathologic state attended with feeble pulse due to diminished arterial pressure, and finally as a last resort in cases of imminent death from any cause.

DISCUSSION.

DR. J. W. S. GOULEY, of New York county, said that he took great pleasure in congratulating this young member of the Association on his most excellent paper. Having been a hospital interne the writer had had large experience with this simple procedure. The older surgeons would recall the complicated methods formerly in vogue for the transfusion of blood, or the injection of

milk or saline solution into the veins. In the early history of the Association at least two different apparatus had been exhibited, and papers had been written on the subject of transfusion. He had observed the action of the apparatus recommended in the paper, and believed it to be the best yet devised for the purpose. In his hospital life he had rarely made a visit to the hospital without learning something from his house surgeon, and so the older members of the Association must ever learn something from the papers presented by the younger Fellows.

DR. M. C. O'BRIEN, of New York county, said that he had had the honor of assisting the late Dr. Joseph Howe some years ago when he employed the transfusion of milk, and had also witnessed the use of aqua-ammonia in the physiological laboratory at Bellevue. With the introduction of serum-therapy had come an entirely new and important department of our science. The apparatus described and recommended by Dr. Reilly was very simple, and the dangers attendant upon its use were so trifling that any practitioner should be able to employ it with satisfaction. This paper, he was sure, would prove a valuable one for reference.

DR. FREDERICK HOLME WIGGIN, of New York county, said that he also wished to commend this very practical paper. He had used saline infusion in many operative cases, and had learned to resort to it freely. It had been found that, instead of making a slit in the vein, it was much more satisfactory to raise the vein from its bed as had been described, then pass two ligatures about it, tie the lower one, and cut the vein across. The cannula could then be introduced directly into the vein. After the infusion, the second ligature should be tied. Recently, in some cases in which the patient had been feeble and unable to take nourishment, he had made it a practice to introduce saline solution into the circulation, and with the happiest results. The procedure enabled the surgeon to do operations which only a few months ago could not have been carried out successfully.

BIBLIOGRAPHY.

- (1.) Dawbarn, *Med. Record*, Vol, XL, '92.
- (2.) Hare, *Therapeutic Gaz.*, Sept., '96.
- (3.) McClintock, *Therapeutic Gaz.*, Aug., '98.
- (4.) Bosc and Vedel, *Gazette des Hopitaux*, p. 938, '91.
- (5.) Athansin, *Compt. Rend. Soc. de Biol*, p. 108, Vol. IV.
- (6.) Delamare, *Gaz. des Hopitaux*, p. 665, '97.

- (7.) Stimson, *Med. News*, Dec. 12, '96.
- (8.) Spencer, *Ther. Gaz.*, March 15, '98.
- (9.) Merlin, *Loire Med. St. Etienne* VII, p. 66, '98.
- (10.) McBurney, *Annals of Surgery*, Aug. 11, '95.
- (11.) Garnier and Lambert, *Comp. Rend.*, Vol. IV.
- (12.) Lejar and Michaux, *La Prog Medicale*, Vol. VIII.
— Morton, *Ther. Gaz.*, Vol. 12, '96.
- (13.) Sir Wm. Hunter, *Lancet*, July 20, '96.
- (14.) Duret, *Rev. Med. Chirurgie des Malades Femmes*, p. 217, '96.
- (15.) Auge, *Revue de Chir.*, Vol. I, '96.
- (16.) Claisse, *Gaz. Med. de Paris*, Sept. 26, '96.
- (17.) Lejars, *La Medicine Moderne*, May 13, '96.
- (18.) Rau, *Lancet*, 1-1609 (1897).
- (19.) Legnani, *Archiro Italiano Rvista Clinica*, p. 31, '93.
- (20.) Pellegrini, *Gaz. del Osped.*, No. 68, '96.
- (21.) Pigot, *Gaz. Hebdoinaire*, No. 83, '97.
- (22.) Brodier, *La Med. Moderne*, June 13, '96.
- (23.) Tomasiloni, *Monatschrifte für praktishe Dermatol.*, June 15, '96.
- (24.) Monvet and Viret, quoted by *Ther. Gaz.*, July 15, '98.
- (25.) Vedel, *Independence Medicale*, Sept. 9, '96.

DERMOID CYSTS OF THE OVARY.

By CRAWFORD E. FRITTS, M. D., of Columbia County.

Read by title, October 20, 1898.

The term "dermoid" is applied to new formations which contain the constituents of the integument in more or less completeness. They always appear as cysts which grow, in the ovary, to the size of a man's head. They are always simple, never proliferating cysts, but one ovary occasionally contains two dermoid cysts. As a rule dermoid cysts are found in one ovary only, but cases have been reported in which both organs were affected. The walls of the cysts are often thick, but sometimes very delicate. The inner surface is either quite smooth or it presents round spots of various sizes, which look like skin and project several millimeters above the surrounding parts. The entire inner surface is lined with several layers of epidermoidal cells, the upper ones flat and non-nucleated, the underlying ones round and nucleated.

The structure of the skin is distinctly shown only by the projecting portions of the wall. Here the epidermoidal cell layers are followed by a distinct corium. The corium often, though not always, contains papillæ, which, although sometimes in close opposition, never present a regular arrangement and vary greatly in length. The skin-like portions of the inner wall also contain a number of usually short hairs, which sprout from the surface. They present all the constituents of other hairs, are situated in hair follicles, and the latter are sometimes provided with sebaceous glands. Some of the sebaceous glands empty, contrary to the normal condition, immediately below the surface of the epidermis. Sweat glands are found less constantly than sebaceous

glands. The dermoid cysts usually contain, in part, a thick oily fluid, in part, a smeary mass like the vernix caseosa, consisting of yellow, soft fat, and epidermis cells. This mass contains more or less numerous matted hairs; a tolerably large knot of hairs is often situated in the middle of the fatty mass. Bones and teeth are among the less constant constituents of dermoid cysts. The bones are situated in the connective tissue layer of the wall, and are covered internally by more or less developed tegumentary structures.

In rare cases several pieces of bone are connected by joint capsules and cartilaginous coverings of the joint ends. The teeth are situated in great part in the connective tissue wall, and in part project into the cavity. In rarer cases they are entirely inclosed in the wall. They are often situated in bony plates, which then contain alveoli. They sometimes possess all the elements of normal teeth; some are rudimentary, and in some the cement is absent. The fully developed teeth may be shaped distinctly like the incisors, canines, or molars, but the perfectly regular shape of the normal teeth is wanting, so it is usually evident that they were not derived from the mouth.

Wathen says no well-defined bone is ever developed in a dermoid growth, and those instances reported of the humerus or maxillary bone, etc., probably refer to cases of extra-uterine pregnancy, as do all cases where bones of the entire body are found. Among one hundred and twenty-nine cases collected by Lebert, teeth were present sixty-three times, but only forty-six times in two hundred and forty-five cases collected by Pauly. There are usually only one or a few teeth present, but larger numbers have been found. In a dermoid cyst in a girl of thirteen, Schnabel found in three bony plates more than one hundred teeth well-developed with the exception of the roots. Such a large number of teeth can only be explained on the assumption that they continue to grow. That this really happens is proven by a preparation in Rokitsky's collection, in which a milk tooth was absorbed as far as the crown by another tooth growing beneath it.

Nerve substance has been discovered in these cysts by Klebs, Virchow, Key, and Rokitansky.

There are several theories entertained concerning the origin of these peculiar structures. Some assume an inclusion of adnormal parts in the ovary during foetal life; others attribute them to an unusual formative tendency of the elements of the ovarian parenchyma. An old theory ascribed them to extra-uterine pregnancy, but it scarcely deserves mention, as they are often met with in children. D. Pozzi says that the theory of impaction, although not beyond criticism, is, on the whole, the most satisfactory. According to this view, during intra-uterine life certain portions of the blastoderm (the layer of cells which form the germinative area) become impacted by pressure within the tissues and, developing there later, give rise to an irregular formation of normal tissues. Cartledge says the origin of these peculiar formations unquestionably dates to embryonic life. If in the original arrangement and formation of the embryonic layers the mesoblast, epiblast, and hypoblast (a small portion of the epiblast) are included in the mesoblastic structures, we have an explanation of the presence of these epiblastic formations. This explanation is further strengthened by the known fact that dermoid cysts are most usually found where fissures abound in the embryo, namely, about the upper portion of the face and head and at the site of those intricate infoldings of epiblastic structures in the mesoblastic clefts which characterize the early embryonic changes of the ovary and testicle. Verneuil was the first to formulate this ingenious theory in regard to cysts of the branchial clefts of the neck and of the head. His demonstrations regarding the axis cord, from which he claims that the genital organs are developed, assist us in understanding the complexity of the elements found in the dermoid cysts of the ovary.

The organs which are formed by all the layers of the blastoderm are the only ones which take part in the formation of the axis cord. It is impossible, by dissection, to identify the different germinative layers. We can easily imagine,

therefore, that portions of tissue corresponding to the corneous layer, the medullary tube, or the middle layer, muscle, and bone, may become misplaced in ovary as in the testicle.

The theory of impaction receives strong corroboration from these researches. Lannelongue adopts it unreservedly. He calls attention, moreover, to the fact that the development of these tissues, foreign to the parts in which they are situated, brings about certain modification in the structure of the latter which adds to the complexity of the abnormal growth; still, Lannelongue does not entirely reject the idea of diplogenesis (the production of double monsters) in cases where foetal remains are found in cysts, which he terms foetal cysts. He considers them to be a combination of cysts and double monsters, the cause giving rise to the production of the monster being intimately associated with that which determines the formation of a cyst. One or the other may predominate, according to the case. The higher we go in the series, the more does the element of monstrosity predominate, and the more does the cystic element disappear. Thus, in the genesis of these tumors, there are two factors to be considered, the production of cystic cavities and the existence of a centre of supplementary development. To admit the existence of this independent centre is to satisfactorily account for the complex character of these neoplasms, but it must be confessed that the admission creates problems quite as difficult of solution as those which it destroys.

The history of the case of which I show the specimen is briefly as follows :

Frances B., aged eleven years, suddenly complained of severe pain in right side. I was called to relieve her at midnight, October 28, 1897. The pain was most acutely felt directly over the McBurney point; examination revealed a tumor the size of a child's head at birth. Great pain and considerable distension of the abdominal walls. Temperature, $102\frac{1}{2}$. Hypodermatic syringe was used, and pus was withdrawn. Diagnosis, suppurating appendicitis. On the following morning preparations were rapidly made for an operation, and then another examination revealed the fact that the tumor had changed its location a little, and seemed nearer

to the median line ; hence this was the location selected for the incision.

On opening the abdomen it soon became evident that the trouble was not appendicitis, for on the presenting portion of the tumor and adherent to it was the healthiest appendix that I have ever had the pleasure to look upon. A great many adhesions were encountered, both omental and intestinal. Many of these were ligated before dividing them. Before removing the tumor some of its contents were removed by the aspirator, then it was withdrawn from the abdominal cavity and the pedicle ligated. On opening, the true nature of the cyst was revealed. The recovery of the little patient was rapid and uneventful. The suddenness of the pain, fever, and other symptoms in a patient who had never complained before, might be an excuse for the error in diagnosis.

In concluding, I would state that the general opinion of surgeons heretofore expressed, that an escape of any part of the contents of a dermoid cyst into the abdominal cavity at the time of an operation would necessarily be fatal, is probably not so in all cases. In the case I have just reported, this accident happened, but without any bad symptom or result.

BRIEF COMMENTS ON THE MATERIA MEDICA, PHARMACY, AND THERAPEUTICS OF THE YEAR ENDING OCTOBER 1, 1898.

By E. H. SQUIBB, M. D., of Kings County.

Read by title, October 20, 1898.

The apparently never-ceasing mill continues to grind out new synthetic and other remedial agents, resulting in a very decided overproduction, the supply far exceeding the demand. The chief source of the large proportion of these agents is Germany, where a special chemical industry appears to have grown up for this very purpose. Young chemists are continuously, at little or no salary, engaged in this form of investigation, and apparently there are few restrictions to completing such work. They are given all the facilities to experiment with their products upon both animals and human beings, quite regardless of the final results. There may be certain workers who are aiming at very definite, looked-for results, but, in working for that one object, undoubtedly many products are produced which, although necessary stepping-stones to such an end, are placed upon the market "to see whether they will go." The great majority of such remedies possess either antiseptic, antipyretic, or analgesic properties, and they are produced so rapidly that little time is given to experiment with them physiologically and clinically before a new crop is turned out with more attractive claims. Therefore it is well to bear in mind that in attempting comments of this kind, only those articles can be selected which deserve any attention at all this time.

ALPHABETICALLY ARRANGED.

Acetanilid (antifebrin) has been little commented upon, specially throughout the past year, although all practitioners are

fully aware of its very extensive and effective use. Little special comment is therefore called for here, but the report on "Unusual Symptoms Following the Administration of Antifebrin," by Dr. P. V. Ballou of Rowena, Ky., may be of interest to some.

"On September 13, 1897, about noon, I was called to see Mr. B. C., aged forty-five, weight 160 pounds, laborer, with a previous history of no practical interest, he having suffered only from the diseases peculiar to children.

"Four days previous, on awakening in the morning, he complained of being uncomfortable and uneasy, with slight nausea and slight headache; his breath was fetid, and he was noticed to yawn a number of times. This state of affairs continued about one hour, when his bones began aching, the pain gradually growing more severe. This was finally followed by chilly sensations up the back, and a little later the whole body felt cold. This continued for about one and one half hours, and was followed by fever lasting four or five hours, and ending in a rather copious sweat, which gave great relief. During the remainder of the day the patient felt reasonably comfortable. This condition of affairs was repeated the three following days, with scarcely any change as to time or severity, save that during the afternoon of each succeeding day the patient felt weaker.

"When I saw the man, on the fourth day, the cold stage had passed and he was suffering from the effects of fever. An examination revealed a slight bronzing of the skin, an enlarged, flabby, whitish-coated tongue, with edges indented from pressure against the teeth; the pulse, 120; respirations, 23; temperature, 104.8° F. The patient complained of an almost unbearable headache and was beginning to sweat, as evidenced by slight moisture of the skin and a few drops standing on the forehead.

"Cold applications being refused, ten grains of antifebrin was given. About twenty minutes after the drug was given, the patient said that his headache was relieved and that he felt easier than at any time since the previous evening. About forty-five minutes after the drug was administered, all sweating ceased and a peculiar sensation of warmth under the skin was complained of. To this, in twelve or fifteen minutes, was added intense itching, while in three or four minutes the whole body presented a general erythematous condition. The entire surface was of a brighter red than that of a typical case of scarlet fever, and like the scarlatinal rash it disappeared on pressure, to return as soon as pressure was removed. No part of the body was exempt from this rash, the

conjunctivæ, palms of the hands, and soles of the feet being as red as any part of the body. The temperature of the surface seemed elevated, but the thermometer in the mouth showed that it was gradually falling. The body appeared as if every superficial capillary was dilated, and an increased quantity of blood was rapidly flowing through each.

"With the appearance of the rash the itching became more intense, the patient assuming all positions possible while scratching. Within the external ear the itching was especially intense, but there was no disturbance of hearing. This condition of affairs, so far as the rash was concerned, lasted for six hours without any apparent change. It then rapidly disappeared simultaneously from all parts of the body, requiring about one half hour in fading away. As the rash faded, the itching abated, and when entirely gone the itching ceased. The sensation of subcutaneous warmth persisted about forty minutes after these had ceased, and then gradually disappeared. Nothing remained on the surface after the rash had disappeared but a few scratch marks to show that it had so recently been the seat of so great a change.

"The pupils were unaffected. Respirations were uninfluenced save by the exertion required in scratching. The heart's action was uninfluenced until about thirty minutes before the rash disappeared, when it became irregular and slightly weaker than normal, but not increased in frequency. About this time an enlargement of the veins of the feet and legs was noticed. This cardiac irregularity continued four days, gradually improving each day, and along with this irregularity was a sense of impending danger. Nothing whatever was given to combat these symptoms, for the patient refused to take anything but quinine. It is also well to state that the only drug taken before the antifebrin was a dose of calomel (about five grains).

"A careful examination of the urine after the rash disappeared showed only a typical febrile urine, which later was normal. The case was diagnosed as one of intermittent fever, and the patient put on quinine in full doses, with the result that he resumed work on the fifth day. No unpleasant symptoms have occurred at any time since." (*Medical News*, Vol. LXXII, page 791.)

As a new application for this agent, the following is interesting. Dr. Stephen Harnsberger of Catlett, Va., read a paper before the meeting of the American Medical Association, at Denver, in June last, on "Acetanilid: Its Use as a Preventive Measure in Premature Expulsion of the Ovum." He states:

"From the published clinical reports on the subject, it is plain that its clinical application has been confined principally to its use as an antipyretic, and, to a less extent, to its sedative action in various nervous disorders and for the relief of pain; but so far as I am informed, Dr. J. H. Wolfe of Elkton, Pa., and myself are the first to find acetanilid a serviceable remedy in threatened premature expulsion of the ovum." . . .

And before closing by enumerating the brief notes of three cases sent to him by Dr. J. H. Wolfe, he gives as his conclusions the following:

"Acetanilid has proved of no less benefit in habitual than in simple threatened miscarriages. In a few cases of women who bore histories of habitual loss of the ovum during previous pregnancies, even where the symptoms were alarming—rhythmical uterine contractions, considerable hæmorrhage and accompanied with more or less pallor and vomiting—a state of calm was quickly reached under the administration of acetanilid in doses of 10 to 15 grains—0.50 to 1 gram—at intervals of one, two, or more hours. (*Journ. Amer. Med. Asso.*, Vol. XXXI, page 964.)

Also a report on the toxic symptoms produced by a so-called headache powder is of interest in this connection. Dr. R. E. P. Squibbs, a surgeon in Lenton, Nottingham, England, writes to the Editor of the *British Medical Journal* (Vol. II, for 1898, page 987) as follows:

"On September 5th last I was called at 9.30 p. m. to Mrs. B., a young married woman, who was suffering from symptoms alarming to her friends. She had complained of feeling unwell for some days past, and on September 5th had purchased a headache powder, which she took at 1 p. m. It quickly cured the headache, but soon produced effects of a most unpleasant kind. These included a feeling of numbness and 'pins and needles' in the limbs, faintness, lividity, coldness of the extremities, and a feeble pulse, with other symptoms of collapse. The temperature was normal, and the mental condition unaffected. As an emetic would probably have been useless, the lady was successfully treated by stimulants, inhalation of ether, and the application of warmth to the extremities. The next day she was feeling fairly well, though hardly fit to perform her usual duties."

Acid Acetic as a menstruum for the exhaustion of crude drugs is now an accomplished fact. Since this time last year much work has been completed with it by more than one set of observers. A systematic series of exhaustions has been, undertaken on a scale

much larger than is possible in the experimental laboratory, and all of the officinal drugs of different coarseness of powder are now being treated in turn with varying strengths of the acid until the proper conditions are found which will complete the exhaustion. The strength of acid employed has varied from that used in the old Pharmacopœial products "aceta" up to as high as 60 per cent. to accomplish the results, the aim constantly being to employ as weak an acid as possible for obvious reasons. The resulting fluid extracts are found to be of the same quality and strength as the officinal products and should be equally effective. The veterinarians have naturally been much interested in these products and have studied the subject in the line of comparative therapeutics. From their encouraging reports further progress in the use of these products is now quite established. The reduction in cost is more of an item with the veterinarian than with the physician, but with the latter also the reduction will be found to be a marked feature. It will be found that the efficiency of the drugs so treated has been largely increased by the elimination of alcohol. Although acetic acid generally exhausts drugs more completely, and thus naturally extracts a much larger proportion of inert matter, it will be noted that such a finished product gives much less precipitate on dilution with water than the alcoholic preparation. This fact will be appreciated by the physician in compounding his prescriptions, for although in some cases a slight precipitate will take place when diluted with water, yet in most cases it will be found to be so slight that it can be ignored, especially as it throws down little if any alkaloidal principles. In general, then, these acetic acid fluid extracts may be diluted without precipitation, of course, with acetic acid, but again even with alcohol to the tincture strength if necessary without giving more than a slight turbid solution, if any, and may be diluted with water without giving nearly as muddy or unsightly a solution as the alcoholic preparation of the same drug. If the action of acetic acid be objectionable in any case such an excess may be neutralized as far as needed with either soda or potash, and the remaining slight acidity will be found to be rather beneficial than otherwise, not only to the alimentary tract but in some cases to the urinary bladder. An instance may be mentioned how a fluid extract of buchu made with acetic acid can be enhanced in its effects by neutralizing at least some portion of the acid present with potash, thus giving in the product potassium acetate and thereby procuring a combination largely used by genito-urinary practitioners.

Comparative trials of these new acetic acid products are therefore urged upon practitioners in general, to verify the favorable reports which have already been made from an increasing number of observers.

Acid Camphoric, produced by the oxidation of camphor by concentrated nitric acid, has been little heard of in the current medical literature of the past year, but undoubtedly it is still being used with good results in the excessive night-sweats of pulmonary tuberculosis. A new combination of this acid with guaiacol has been obtained for which the name "guaicamphol," has been coined. It occurs in fine, colorless, odorless and tasteless crystalline needles, insoluble in water but readily soluble in diluted alcohol and chloroform. It is recommended for excessive night-sweats and diarrhoea.

Acid Carbolic (phenol) has been too frequently alluded to specifically to even attempt to make a short enumeration of its favorable applications. It may be well, however, to mention one or two combinations which have apparently met with some little success. Dr. Frank Parsons Norbury of Jacksonville, Ill., has expressed his preference for a combination of this acid with equal parts of camphor in the local application for the treatment of erysipelas. He found it to be a valuable antiseptic without showing any evidence of being an escharotic. (*The Medical Fortnightly*, Vol. XIII, page 223.)

Another compound comes recommended from France. It consists of

Acid carbolic	80 parts
" salicylic	10 "
" lactic	20 "
Menthol	1 "

for which the name of "phenosalyl" has been coined.

It may be of interest to some observers to simply put on record here for reference the report of Captain R. C. Thacker of the British Army Medical Service, of his treatment of enteric fever by this agent at the British General Hospital, Nowshera, Punjab, India, where he states he had most excellent opportunity afforded of giving a further and more extensive trial to the carbolic acid treatment in enteric fever, and the following has been the result up to the present date :

Number of cases treated, 79.

Number of deaths, 11.

Percentage of mortality, 13.9 per cent.

His concluding remarks are as follows :

“The following favorable signs appeared after the administration of the acid :

“1. A rapid cleaning of the tongue with the abolition of the characteristic unpleasant odor from the breath.

“2. A sustained and remarkable lowering of the febrile temperature with a well-marked morning remission in many cases.

“3. Marked improvement in the unpleasant odor from the stools, which in a few days become practically deodorized.

“4. Tympanites, diarrhœa, and delirium were rarely excessive, and easily under control.

“5. A most favorable convalescence with a sound recovery.”
(*Brit. Med. Journ.* Vol. II for 1898, page 888.)

Acid Citric has been little commented upon for its individual action although some mention has been made of its use as a prophylactic in pertussis. It has been proposed to swab out the larynx with a 10 per cent. solution of citric acid in simple syrup. This not only destroys the bacilli but is claimed to act effectively against infection. It is recommended to carry out a very attractive plan, which no doubt would not be objected to by the children, of administering small quantities of citric acid lemonade throughout each day to all who are living in the neighborhood of the infection. There is little doubt but that the children will come around often enough to prove any claims that may be put forward as to its value as a preventive.

Acid Hydrochloric has been discovered (somewhat by accident) to be of value in sciatica.

“A somewhat remarkable instance is recounted in the *Semaine Médicale* of a patient having arrived at a successful method of treatment for himself by the merest accident—an accident, too, which was founded on a blundering ignorance of chemistry. A man who had suffered for many years from sciatica was treated in an Algerian hospital by means of hypodermic injections of salt and water, but without much success. After he had left he bethought him that perhaps the salt was not strong enough and that a stronger preparation of salt might be more successful. He therefore procured some ‘spirit of salt’ (hydrochloric acid) and painted it on the skin, getting rid of his long-standing trouble in a few days. Having occasion shortly afterwards to attend the hospital for some other affection, he confided in Dr. Bourlier, professor of therapeutics, whom he saw, how he had managed to get

rid of his sciatica. This gentleman thought the plan worthy of trial, and employed it in several cases with invariable success. He then told his son, Dr. Maurice Bourlier, who was house physician, and he treated a number of cases with great satisfaction to himself and to his patients. A thesis has recently been published on the subject by Dr. C. Gennatas of Montpellier, on the basis of a dozen cases of neuralgia of the sciatic nerve, all of which were completely relieved by this means. The procedure is simple enough. Half an ounce of strong hydrochloric acid is put in a small cup and a brush is dipped in it and applied over the painful part of the nerve, three or four coats being painted on. The limb is then enveloped in a cotton-wool dressing. Of course, the application causes a somewhat severe smarting sensation, but this is quite bearable. A few minutes afterwards the skin becomes reddened and hot, and sometimes bullæ are formed which fill with fluid. These, even if they occur, disappear in two or three days. Usually the patient feels better even after a single sitting. The application can be repeated in from twenty-four to forty-eight hours, but not again for several days for fear of producing sloughs. Of course, too, where there are bullæ they must be avoided in subsequent applications. No serious inconvenience is caused by the hydrochloric acid, such as was experienced when a similar procedure was attempted some years ago by Dr. Legroux with strong sulphuric acid, which was found to be liable to cause extensive sloughing of the skin. The twelve patients referred to were all reported as cured in from three to five sittings extending over from a week to twenty-five days. It may be well to say that the hydrochloric acid of the French Codex is very slightly stronger than that of our own Pharmacopœa." (London *Lancet*, Vol. II for 1897, page 1,338.)

Acid Lactic has been little heard of by itself in the medical literature of the past year, but Dr. James Donelan of London, England, takes occasion, in reporting on his special treatment of laryngeal tuberculosis by submucous injections, to speak of the indisputable good results from the local use of this acid in the treatment of this affection, and that as far as he can understand it may be looked upon almost as a specific.

It has been reported by Dr. Ilkewitsch of Moscow, Russia, that he has satisfied himself experimentally of its efficiency as a destroyer of pathogenic micro-organisms in the utero-vaginal tract.

"A three-per-cent. solution, injected into the vagina, he finds:

overcomes the odor that may be present in cases of leucorrhœa, changes the color of the discharge from green or yellow to white, and may be used without danger in ambulatory practice and in cases of salpingo-oophoritis. In certain cases, he thinks, the intra-uterine employment of a stronger solution may be substituted for the use of the curette." (*N. Y. Med. Journal*, Vol. LXVI, page 707.)

Acid Mono-Chlor-Acetic has again been brought forward. It is one of the three chlorine compounds of acetic acid obtained by the action of chlorine upon glacial acetic acid containing about 10 per cent of iodine. After distillation that portion of the distillate is reserved which distils over between 180° C. and 188° C. (356° F. and 370.4° F.).

Dr. Jas. C. McGuire of Georgetown University, D. C., has reported (*Journal of Cutaneous and Genito-Urinary Diseases*, Vol. XVI, page 329) on the treatment of several cases of xanthoma with this acid with gratifying success. No pain was experienced when it was applied, although swelling sometimes occurred, which, however, soon subsided. He recommends that small portions of the skin only should be painted at one time, for the reason that it first turns the parts white and then shortly results in forming a dark crust which should not be disturbed but allowed to separate from the skin spontaneously. This treatment deserves following up and the results should be reported.

Acid Picric (tri-nitro-phenol) continues to be considered of some value but closer observations are being made of its action. Dr. F. E. Tulley of Granite City, Ill., writes to the editor of *The Journ. of the Amer. Med. Association* (Vol. XXI, page 138) concerning the use of this acid as first aid in the treatment of burns. He states that in the form of a solution he has obtained excellent results and desires to record several cases.

"Shock and septicæmia are the most dreaded results from the more severe cases, but all this can be eradicated by the persistent use of a weak solution of picric acid.

"During the past three years several cases have come under my care and all have been treated alike, much to my satisfaction. While I do not wish to be original in this sense, I wish to recommend a good thing.

"T. B. K., chemist, age 23 years, in opening a can of gasoline the escaping gases exploded, burning him frightfully about the body, face, and extremities. He was carried to a building, and when I saw him was suffering untold agonies. I immediately had

prepared a saturated solution of picric acid and bathed the whole body in it, covering the body with cotton and bandages. After a few minutes he said the pain was all gone and fell into a sleep. Several others who got burned at the same time expressed themselves as relieved as soon as the solution was applied.

"I generally make up a pint of solution at a time and dilute as wanted.

"Picric acid	15.5 grammes (4 drachms)
"Alcohol	125.0 " (4 ounces)
"Water distil	250.0 " (8 ")

"Picric acid for burns of the first or second degree is the simplest, quickest, and most satisfactory treatment in my hands. It deadens pain and allays suppuration, healing spontaneously, the only objection being its staining qualities.

"I generally soak absorbent cotton and lay it smoothly on the wound, cover this with rubber tissue and leave it on for two days or until a new skin forms.

"I also apply an ointment occasionally, composed of ichthyol and vaseline, which softens the hardened epidermis.

"While I do not propose to bring out anything new in this modern treatment I hope at least it may be more often tried by those who have discarded the old-fashioned methods so long employed on suffering humanity."

Dr. Ellice M. Alger of New York has written an article "On Cutaneous Burns" which appeared in the *New York Medical Record* (Vol. LIII, page 766), concluding as follows: "I have used it in a good many forms, but have found the combination with citric acid, as devised by Esbach for the detection of albumin in the urine, by far the most satisfactory:

"Acid picric	10 parts
" " citric	20 "
"Water	up to 100 "

"Without any elaborate attempt to cleanse the skin of any except the worst of the extraneous matters, any bullæ should be opened with an antiseptic needle, freely but without any special attempt to express their contents. The fluid should be sopped on freely, care being taken that it reaches the interior of every vesicle. Picric acid alone is a rather weak acid, and coagulates albumin but poorly in an alkaline medium. The citric acid acidulates the alkaline exudate, which the picric acid promptly

converts into an antiseptic coagulum, capable of excluding the air and resisting infection. The combination, after a momentary smarting, relieves the pain more quickly and completely than anything I have ever tried. After the excess of fluid has drained off, the part may be covered with soft gauze and not disturbed for several days. It makes a clean, comfortable dressing, and I have never observed any toxic effects. After the first dressing it should be reapplied every two or three days, only to those areas where exudative fluid has formed.

"Picric acid is a good cornifying agent, and therefore hastens granulation, while its antiseptic action renders it especially valuable in those cases in which large granulating surfaces are suppurating. Here we must often stimulate granulation by use of nitrate of silver or balsam of Peru, while not infrequently we must avail ourselves of the resources of the surgeon and have skin grafting done. Large granulating surfaces should be dressed a part at a time, and dry powders will be found much preferable to ointments, which tend to confine irritating discharges near the surface."

A note of warning has been made in reference to the indiscriminate use of picric acid dressings in the treatment of burns, in a communication presented to the Société de Chirurgie of Paris, at its meeting on January 19th last by Dr. Walther. The cases were two children whose burns had been dressed with 200 grammes of an ointment of the strength of 1 to 10, and both suffered from vomiting, intestinal pains, diarrhœa, black urine, and jaundice.

At the same meeting, Dr. Brun reported a death following the use of this acid, in the case of an eighteen months' old infant, and he therefore had abandoned its use. Other surgeons at the meeting agreed that other antiseptics were as good and even better than this acid. The majority, however, approved of its use as they had obtained good results. After some extended use Dr. Walther has drawn the conclusion that infants appear to be very sensitive to it, and that even adults showed varying degrees of tolerance. (*Gaz. Hebdom. de Médecine et de Chirurgie*, Vol. XLV, page 89.)

Dr. Charles Willems of Ghent, Belgium, points out that picric acid is really of use only in burns of the first and second degrees. The special action of the acid is to favor the growth of new epidermis. In such superficial burns the utility of the agent, he holds, is beyond question. By means of it he has seen extensive burns of the face and limbs heal with great rapidity. Epidermisa-

tion takes place so quickly that no suppuration occurs. Another advantage of the picric acid is its marked analgesic property. In burns of the third degree he finds the acid much less useful; it does, indeed, check suppuration, but it has no effect in quickening granulation. As in practice, however, these three degrees of burns are generally present at the same time; the acid may with advantage be used at first, as it soothes the pain and rapidly heals the superficial lesions; an antiseptic can then be substituted for the treatment of the granulating surface. The pain and the toxic accidents which have been placed to the discredit of picric acid are to be attributed to the use of too strong preparations. He points out that a saturated watery solution has generally been used, compresses soaked in this being applied to the wound and allowed to dry on it. He points out that picric acid is dissolved in water in the proportion of only about one-half per cent. He claims that the cases of poisoning reported to the Paris Surgical Society were rather misleading as the solutions used appeared to be of a strength of 5 and 10 per cent. He contends that it is unfair to condemn an agent for effects due to its misuse. He uses the acid in vaseline ointment of the strength of 1, or at most 2 per cent.; 15 g. of this spread upon lint make a dressing suitable for a vast burn. Although most of his patients have been children, he has seen no sign of toxic effect, and the pain, when there was any, was slight and transient. The sole drawback is the yellow discoloration of the skin which the acid produces. This can be gotten rid of by repeated washing with alcohol, or with carbonate of lithium diluted with water.

Dr. Fage reports in the *Lyon Medical* (Vol. LXXXVII, page 62) the satisfactory use of this acid in the treatment of blepharitis in solutions of 5, 8, and 10 parts to the 1,000, and in place of water he has found glycerin and water preferable for it adheres better to the ciliary border. He has obtained very favorable results in every instance of all kinds of blepharitis. He takes pains to free the lids from any crusts that may be present by bathing them with a simple solution of either boric acid or ichthyol. Such application is repeated every second day. In impetiginous and eczematous cases the sense of heat and itching rapidly disappear and the discharge if present subsides. In the glandular and ulcerative forms of this affection, after cleansing the ciliary border, he opens the little pustules, pulls out the lids that are most altered, touches the little ulcers with cotton saturated with a 10 to 2,000 solution and then in about two minutes paints the

whole ciliary border with a still weaker solution. He finds that such an application does not irritate either the skin or the conjunctiva, and if care be taken in the application of the solution to these little spots so that they alone are touched, the amount of yellow discoloration is so small that it is not conspicuous.

Some success has been obtained by using this acid in cases of eczema where the inflammation is acute and superficial and where the lesions are mostly epidermic. In the chronic forms accompanied by induration of the skin and particularly by epidermic thickening, this acid does not appear to give satisfactory results. In the acute cases with swelling of the integument, superficial ulceration and weeping, excellent results are obtained. Under its influence the inflammation rapidly subsides, and a protective layer composed of coagulated proteid substances is formed over the ulcerated and oozing surfaces, thus promoting rapid healing. Although it is of little benefit in chronic cases, yet both in these and the acute cases accompanied by itching, some relief is obtained. The acute cases are practically relieved in from ten to fifteen days. The solution used is that of the originator of this plan of treatment, Dr. Paul Thiéry, and mentioned here last year :

Picric acid	3 parts
Tepid boiled water	250 "

This is painted over and somewhat beyond the affected surfaces, after which they are wrapped in lint well saturated but wrung out with the same solution. Then a covering of cotton-wool is placed over the whole. An important precaution is necessary in order to avoid maceration of the surfaces as otherwise it is pretty certain to occur. That is to refrain from using oiled silk as a protective covering. The dressings should be renewed every two or three days, and the recommendation of Dr. A. Brousse of Montpellier, France, spoken of here last year, should be carried out, and that is to thoroughly wash the parts with a solution of boric acid so as to render the cutaneous surfaces as completely aseptic as possible.

Unexpectedly good results are reported from the use of the following solution in the treatment of suppuration of the ear :

Picric acid	200 milligrammes (about 3 grains)
Alcohol	2.75 Cc. (about 45 minims)
Distilled water	19.00 Cc. (" 300 ")

This solution is left for a few minutes in contact with the tympanum, producing a cauterizing effect of the secreting membrane.

Desquamation of the tympanum and of the meatus occurs, which matter must be removed by frequently cleansing.

Actol (silver lactate), used as a surgical antiseptic, has not had much attention paid to it in the current medical literature of the past year. Its use in dentistry, however, has been noted. After removing disorganized pulp it has been used with good effect in cleansing the root canal of affected teeth. The cavity is recommended to be thoroughly washed out with a 1 to 2000 solution of this agent and then the other silver salt, the citrate (itrol) blown into it with an insufflator. In cases where the tooth pulp has been recently destroyed, a simple dusting of itrol appears to be sufficient, but where the pulp has become putrid two or three applications of actol seem to be necessary.

For convenience in using, tablets have been made of these silver salts. Silver silk, catgut, and silver wool have been made with a solution of this agent; the latter has apparently been very effective in dentistry in packing a decayed tooth to remove the fetid odor.

Airol (bismuth oxy-iodo-gallate) still continues to be used with success as an antiseptic. Its marked usefulness in the treatment of gonorrhœa induced a trial to be made of it in a case of ophthalmia in a newly-born child, after having used silver nitrate with the result of rather increasing the extreme inflammation than diminishing it. A 5 per cent. ointment made with vaseline left in contact with the mucous membrane for twenty minutes and then washed off thoroughly with a solution of boric acid produced immediate improvement,—the swelling and conjunctival secretions being greatly diminished by the following day when a fresh application was made. Suppuration was entirely prevented thereby and in a week's time successful results were obtained.

Dr. Niessen in investigating the value of the various substitutes for silver nitrate in the treatment of gonorrhœa concludes, in comparing with others, that the bactericidal activity of this agent is less than that of silver nitrate. In many cases it acts as an irritant and sometimes causes turbidity of the urine. Although Dr. Niessen is an authority whose opinion deserves attention, the majority have obtained successful results in this affection.

Dr. George Wherry of Cambridge, England, has made a report on the use of "*Airol Powder in Corneal Ulcer with Hypopyon.*" He reports as follows:

"The cases are common in agricultural districts, often as the result of slight injury, such as is received in 'cutting the quick,'

that is, trimming the hedge, or when the eye is 'stubbed,' that is stabbed with stubble. Such lesions of the cornea seem very liable to infection; sometimes doubtless are fouled from the first, as when the scratch is received where the butcher bird has been at work, and covered the thorns of the hedge with putridity, but often the corneal wound is ill treated before it can heal, and the tainted wound is bathed in microbic exudation, the irritating products of the microbes then rapidly affects the vascular tissues in the eyes, and causes the formation of pus in the anterior chamber. The pus can be watched through the clear and imperforate cornea. The ulcer may be a comparatively small one, but the patient will usually need admission to the wards, and sometimes incisions or the cautery. Some of the most threatening cases have been successfully treated with *airol* powder in the following manner:

The eyelids are held open and the *airol* powder flicked on to the eye with a dredger, the powder turns gradually to an orange color, and in three to six hours the conjunctival sacs are washed out gently with boric water, which brings out superfluous cakes of yellow powder. The *airol* is again used as before, and this proceeds every few hours, the eye being treated by the open method—no bandage or pad is used—but the patient is kept in bed.

The ulcer heals, and the pus is absorbed in a proportion of cases greater, as far as I can judge, than by other methods. The eye is singularly tolerant of the *airol*; in no case have I seen signs of irritation from its use, and when incision and cautery have been used the after-treatment by *airol* has seemed to be satisfactory.

At present I have not tried it in purulent ophthalmia. In herpes and ulcers of the glans penis, carbuncles, boils, and sloughing sores it has been useful in acting like iodoform, but without the objectionable odor. (*Brit. Med. Journ.*, Vol. I, for 1898, p. 144.)

Among other cases of bismuth poisoning from the use of this agent, one case may be of interest to mention here. It was one in which a practitioner injected into a psoas abscess somewhat over an ounce of a 10 per cent. emulsion with equal parts of glycerin and olive oil. Marked symptoms of bismuth poisoning were manifest in the course of three days in the way of nausea, stomatitis, and black coloration of the oral mucous membrane and other accompanying symptoms which did not subside until the abscess was freely opened and the *airol* permitted to escape. The conclusions are drawn that glycerin should not have been used with it as its action is apparently more potent when dissolved in that excipient.

The general conclusions for the past year would be that aïrol is an effective astringent and a moderately potent antiseptic, but it must not be expected that it will show its best results when a more energetic action is called for; then some of the more potent agents like iodoform should be used. It is odorless and very cheap—two points much in its favor.

Alumnol, the astringent and antiseptic, has had little attention paid to it in the current literature of the year, although still quite prominent in its use.

Aminoform is the new name adopted for what has previously been known under the name of urotropin, commented upon here last year. There is no reason given for the need of another name for the latter agent, but probably some enterprising manufacturer thought he could make a little capital out of a new name. Dr. Walter of Sulzbach, Bavaria, for instance, has reported on the use of saligenin and this aminoform in which the latter proved to be of value when used over lengthy periods in those cases predisposed to gouty attacks, as saligenin seemed more especially useful in acute attacks. (*Muench. Med. Wochensch.*, Vol. XLV, page 302.)

Ammonol (so-called ammoniated phenyl-acetamide), the "anti-pyretic, analgesic, and stimulant," is still largely advertised and employed, the majority using it obtaining most favorable results, but it is to be hoped that after the most conclusive publication of its composition, practitioners will be disposed to make up a prescription of the ingredients rather than insist upon their patients paying the disproportionate price for the already made-up and advertised article. It may be a convenience to some to have it again stated here this year that a careful examination of this article was made by Mr. George M. Beringer of Camden, N. J., who made a full report in the *American Journal of Pharmacy* (Vol. LXIX, page 150).

Amyloform, the patented substitute for iodoform, formed by the combination of formaldehyde with starch, is still in use, but less has been reported upon it than a year ago. Dr. Hugo Löwenthal of Berlin, Germany, reported at a meeting of the Berlin Society of Physicians, on November 22d last, that he had carried on a series of experiments on the disinfection of the intestine by formaldehyde, and found this form of that agent especially suitable for his purpose, for the reason that it does not break up into its ingredients until it reaches the intestine, where it parts with its formaldehyde just in proportion as the starch is transformed into sugar. Upon examination of the urine he found formalin

present and a decided decrease in the sulpho-conjugated acids, the amount of which is known to indicate the degree of intestinal putrefaction. He concludes that this agent is an excellent intestinal disinfectant, the action of which may be controlled by frequent assays of the urine.

Anæsthesia, although always a very prominent subject in the minds of all medical men, and particularly the surgeon, has been probably somewhat more prominent during the past year, owing to the fact that various forms of anæsthetics have been brought forward. Much more attention has also been given to the detail of administration, and therefore much good may be expected from such an agitation. The reckless use of anæsthetics in some quarters has been the subject of much comment, and aside from the expense of such recklessness other conditions are quite prominent. Interesting "Remarks on 6,657 Administrations of Anæsthetics Conducted at the London Hospital During the Year 1897" has now been published (London *Lancet*, Vol. I for 1898, page 483).

Dr. L. Fuster, who read a communication "On General Anæsthesia," before the Société des Sciences Médicales, in which he used two parts of chloroform to one of ether, has apparently verified what others, at least on this side of the Atlantic, have repeatedly found, and that is that the exciting stage is much reduced, if not entirely eliminated, by this mixture, and the patient comes out in quite a normal condition. Vomiting is found to be much less frequent. (*Nouveau Montpellier Médical*, Vol. VII, page 708.)

The Schleich so-called compound (now at last acknowledged to be a mixture) has had quite a varied history in this country, especially in New York city, where its advantages have been strongly urged. The petroleum ether element, however, is gradually being abandoned, and those observers who claim the great advantage of combination are looking for another product which will fill the place of the omission and accomplish the objects Schleich was aiming at. Too little attention and consideration are given to the question of careful administration with the already well-known anæsthetics. It is justly claimed by many that if as much consideration be given to the use of minimum quantities of chloroform and ether properly applied, as has been insisted upon with the Schleich mixture, little complaint could rightly be made with the older anæsthetics. The enthusiasts of Schleich's mixture are bragging over the extended series of administrations without disagreeable or unfortunate results, and appear

to ignore the overwhelmingly greater list of favorable results, when the older anæsthetics were administered with equal care.

Dr. D. H. Galloway of 200 Oakwood Boulevard, Chicago, Ill., in an article written by him entitled "The Administration of Anæsthetics" (*Journ. Amer. Med. Asso.*, Vol. XXX, page 1,141), has called attention to his plan of counteracting the decomposed products of chloroform resulting from contact with exposed gas-light in the operating-room, and states that his practice has been to saturate a towel with ammonia water and hang it up, or to scatter a little ammonia water about the room. This no doubt will accomplish the results as far as it goes, but it must be remembered that if sufficient ammonia was thus distributed in some operating-rooms known to the writer, the quantity necessary would be quite as irritating to all present, including the patient, as the chlorine compounds, although probably not as dangerous.

Analgen (ortho-oxy-ethyl-ana-mono-benzoyl-amido-quinoline) has been unheard of during the past year, and it may be that its use is on the wane.

Anäsin, the new synthetic, hypnotic, and anæsthetic alluded to here last year, has been unheard of in the literature of the past year, and the further researches which were urged last year have evidently either not been undertaken, or those investigating are not yet ready to report.

Anilipyrin, the mixture of acetanilid and antipyrin offered as a new antipyretic and analgesic, has not been thought of sufficient importance to allude to in any of the medical literature of the year, and the clinical reports which were promised last year have not yet appeared.

Anozol, the mixture of powdered thymol and crystals of iodoform, being merely a name coined for this mixture, would not necessarily appear again as a special article of importance, and therefore it is not difficult to understand how it has been omitted from the literature of the year.

Antinosin (sodium salt of tetra-iodo-phenol-phthalein) has undoubtedly held its own during the past year. It has been recommended as a valuable addition to tooth and mouth washes, either by itself or in solution. Being readily soluble in water, odorless, non-toxic, and almost tasteless, one can readily appreciate its application. It is well to bear in mind, however, that it is quite necessary to use distilled water to obtain a clear solution, but again it is best dissolved in glycerin, which solution keeps much better than others. The proportions recommended for a mouth

wash are 5 cc. of a one per cent. solution in a tumblerful of water. No discoloration of the teeth occurred in one case reported of a one per cent. solution being used for over a month. A little peppermint water is recommended to improve the taste of the solution, if desirable. In cases of caries of the teeth and in salivation from the use of mercurials, good results have been obtained with a two per cent. solution.

The laryngologist has made good use of this article throughout the year, quite frequently in the form of a spray. A precaution has been mentioned by more than one, which it may be of service to repeat here, and that is before spraying the nose and throat of patients, it may be well to call their attention to the color of the solution to be used, otherwise if any of the fluid happens to be retained in the passages and is expelled later, they may immediately infer that a hæmorrhage exists. Even the practitioner himself is deceived at times if he does not remember for the moment that that was the color of the solution he introduced.

In the treatment of the eye and ear, this agent has been of use. Dr. W. Franklin Coleman of Chicago, Ill., reports (*Journ. Amer. Med. Asso.*, Vol. XXX, page 256) his results in the treatment of diseases of the eye and ear as follows:

“For some time I have felt the need of an antiseptic remedy which would be efficient, and non-irritating to the eye. While formalin is one of our best, if not the best of antiseptics, a solution of even 1 to 5,000 causes considerable pain. The action of sublimate is very superficial, and clinically unsatisfactory. Boric acid and iodoform are only very slightly antiseptic. I have also desired to get some of the properties of iodine, the tincture of which is well known to be curative when applied to *ulcus corneæ*; on account of its irritative effects its usefulness is very limited.

“I have recently used antinosin in a considerable number of cases (both in my private and clinical practice) of catarrhal, palpebral, and follicular conjunctivitis, phlyctenulæ, *ulcus corneæ*, blepharitis marginalis, and also in otitis media purulenta. In a 1 to 2 per cent. solution, it does not cause pain in the eye or ear, the patient rarely complaining of any unpleasant sensation. Antinosin is the sodium salt of tetra-iodo-phenol-phthalein. It is a dark-blue amorphous powder, readily soluble in water and alcohol, odorless, non-toxic and non-irritant. It makes a purplish solution in water. The stain caused by very strong solutions can be readily removed by washing.”

He then concludes with a short enumeration of eight out of his

many other eye and ear cases which had been treated with good results.

Dr. Claude A. Dundore of Philadelphia, Pa., has evidently continued his investigations with this agent, for, in addition to his previous report of its use in surgery, alluded to here last year, he now has published a paper on "Nosophene and Antinosine in the Treatment of Genito-Urinary and Venereal Diseases, with Report of Cases,"—all with beneficial effects.

His cases were: four of simple urethritis, eleven of simple elytritis, three of abscess of vulvo-vaginal gland, six of herpes præputialis, five of chronic cystitis, four of specific balano-posthitis, four of specific elytritis, sixteen of specific urethritis, five of chronic specific urethritis, three of gleet, five of bubo, six of chancre, and three of chancroid.

Dr. Niessen, in his comparative experiments with some of the new substitutes for silver nitrate in the treatment of gonorrhœa, reports that antinosin possesses no particular advantage over silver nitrate, although it may sometimes be substituted for that salt with advantage. (*Muench. Med. Wochensch.*, Vol. XLV, page 359.)

Antipyrin (phenazone) has been an article of increased interest this year by reason of the fact that the fifteen-year limit of the German patent expires, and at this date it is thrown into the open market for general competition. This fact will not increase its use by any means, for those who have made any use whatever of it claim that it is a necessity to them, therefore any price which may be assigned must be paid. However, it will be a saving to the patient, for he is really the one who eventually has to pay the bills. It is to be hoped that if any increase in the use comes from the natural drop in the price, that it will not lend its influence to the already existing abuse of this important agent.

Practitioners throughout the world are now too familiar with the general use and abuse of this agent to expect that any attempt at exhaustive comments here will be of sufficient value to even read over hurriedly. Therefore, the few remarks made here will be only those picked out from a much greater number, to illustrate or allude to some special uses, which are not necessarily known by the general practitioner, and are simply enumerated here to bring them together for ready reference.

An interesting letter addressed to the editor of the *N. Y. Med. Record* (Vol. LIII, page 501) by Dr. G. Frank Lydston of Chicago, Ill., on this agent as a local anæsthetic, reads as follows:

"I desire to call attention, in this preliminary note, to what

promises to be a new departure in genito-urinary surgery. I have used, as a substitute for cocaine in a number of cases of urethrotomy, a 10 per cent. solution of antipyrin in a 1 per cent. solution of carbolic acid. As far as my observations have gone, the solution appears to be quite as efficacious as cocaine. In meatotomies, when, as is well known, the skin incision is usually painful, I have found even less complaint than when cocaine is used.

"The advantages of the agent as compared with cocaine are: 1, absolute safety; 2, freedom from constitutional effects; 3, distinct lessening of hæmorrhage, both before and after operation; 4, less disturbance of nutrition of the wounded tissues.

"I have, thus far, used only a 10 per cent. solution of antipyrin. I have not experimented, as yet, with a simple, aqueous solution. The solution should be fresh, and should be allowed to remain in the urethra for ten minutes, as a rule. I have, however, begun cutting within five minutes after injecting it. I would suggest the antipyrin solution for nose and throat work. It will at least make a safe foundation for further anæsthesia with cocaine. Absorption of the cocaine and hæmorrhage will both be inhibited, thus adding greatly to the safety of operations. Unlike that of cocaine, the styptic effect of antipyrin is not followed by vascular relaxation, and often almost uncontrollable hæmorrhage."

The following note on the value of antipyrin in labor will be of interest:

"The very extraordinary number of ailments in which antipyrin has proved itself useful, leads one on one hand to believe all that can be said in its favor, and on the other to doubt the possibility of its proving efficacious in any additional conditions to those in which we already employ it. It is worthy of note, however, that very shortly after antipyrin was first brought forward as a pain reliever, several clinicians suggested its use for the purpose of relieving the pains of labor. It is not surprising, therefore, to find that it has been largely used, and that we are now in a position to decide as to its pain-relieving powers in the parturient state. Increasing knowledge of this drug has certainly shown that whatever power for good it has is confined to practically one stage of delivery. It seems hardly necessary to emphasize the fact that it can under no circumstances supplant the ordinary anæsthetics, and it must be remembered that the coal-tar products prove themselves useful in those forms of pain which may be called nerve-lesions, and are usually practically powerless in the pains of inflammatory processes.

"According to the studies of Misrachi it is a useless remedy for the pains of a perfectly normal labor, but finds its chief usefulness in those cases where the pains are so excessive as to reflexly interfere with the proper uterine contractions. In this condition, he asserts that it is most efficient. Misrachi decides, too, that it is indicated in tedious labor when the pains are severe. He also believes that it is useful when the liquor amnii has been discharged too early, and where there is rigidity of the os. In regard to the second stage of labor, Misrachi concludes that antipyrin is useless. There is evidence, however, that antipyrin has considerable ability to relieve the so-called after-pains. It is also seemingly a fact that antipyrin may be used with some success for the purpose of quieting a tendency to the development of pains before the full term has been reached. If it is intended to use antipyrin for the purpose of arresting a threatened miscarriage, then its dose must be very large—as much as thirty or forty grains given in two or three doses of fifteen grains each at half-hour or hour intervals." (*Ther. Gaz.*, Vol. XXI, page 741.)

Dr. P. Ardin-Delteil of Montpellier, France, has published in detail an account of a case of acute dysentery in his practice in which he injected through the rectum 4.5 grammes (about 75 grains) of this agent three times each day, with favorable results. (*Nouveau Montpellier Médical*, Vol. VI, page 833.)

Dr. G. Lemoine has recommended this agent as effective in the early stages of fatty diabetes as described by Lancereaux. He apparently has administered varying doses, but has never exceeded the maximum of 3 grammes (about 45 grains) each day. His usual daily dose has been put up in cachets according to the following formula :

Antipyrin	0.75 to 1.00 gramme
Sodium bicarbonate	0.50 to 0.75 "

(*Le Nord Médical*, Vol. 5, page 109).

Some observers still continue to notice a peculiar eruption following the administration of this agent. It would seem at times as if such phenomena occurred more frequently with certain practitioners. Dr. Wilhelm Wechselsmann of Berlin, Germany, has written an article entitled "Antipyrin-Exanthemata." (*Deut. Medicin. Wochens.*, Vol. 24, page 335.) He relates five of his cases in which he has found considerable difficulty in assigning the cause of this peculiar rash. He finds it sometimes covering the whole body and at other times confined to definite areas. He thinks

that when located in such definite areas it should be attributed to syphilis. He has noted that frequently the rash appears only after antipyrin has been taken for some little time, thus making the patient think that the rash cannot be due to the remedy. The rash apparently is not as frequent as one would expect from the abuse to which this agent is put. The dose also seems to have little effect.

The following letter on the incompatibility of antipyrin and sodium salicylate in powder form written by Dr. Wm. J. Robinson of New York city to the editor of the *N. Y. Med. Journal* (Vol. LXVI, page 606) will be of interest :

“Permit me to call the attention of the readers of your valuable journal to the fact that antipyrin and sodium salicylate cannot be dispensed together in powder form ; immediately or within a short time liquefaction takes place, and when the powders reach the patient he is likely to find no powders at all, but only thoroughly soaked pieces of paper. Though for practical purposes it is immaterial whether the change is of a chemical or of a purely physical nature, it is my opinion that the liquefaction occurs in virtue of a true chemical reaction. Helbing, in his *Modern Materia Medica*, says : ‘The reaction of sodium salicylate and antipyrin, sometimes stated to be the result of a chemical change, has been decided by careful research to be merely the result of deliquescence, the salicylate acting as a carrier of moisture to the more soluble antipyrin (spica.)’ To this statement I am unable to agree. Sodium salicylate is permanent in the air—*i. e.*, it does not attract moisture ; nor is antipyrin *more* soluble. Rather the contrary. Antipyrin is soluble in one part of water, while sodium salicylate is soluble in 0.9 part of water. Nor does sodium salicylate contain any water of crystallization which might be liberated during trituration and act as a solvent for the antipyrin (as is the case with many salts).

“The subject of the incompatibility of the two above-mentioned drugs was recalled to my mind by an occurrence which took place a few days ago. A physician was called in to a patient suffering with acute articular rheumatism ; the fever was very high and the pains were excruciating. The doctor prescribed powders of phenacetin, antipyrin, and sodium salicylate, and the druggist was asked to make them up in a hurry. It was a damp evening, and when the medicine was brought to the patient there was *not a particle of powder* left, only a wet box of papers. The druggist was asked for an explanation, but he said that it was none of his

business, that he made up the prescription as the doctor wanted, and if anything was wrong, they should apply to the latter for information. They went to the doctor—he was out and another physician was sent for. He relieved the patient by a hypodermic injection of morphine and prescribed capsules of phenacetin and salol; he was asked to take further charge of the case. Thus, non-familiarity with the important but sadly-neglected subject of incompatibilities lost the physician a good family.”

The following communication relating a case of stomatitis produced by antipyrin sent to the *British Medical Journal* (Vol. II for 1898, page 807) by Dr. G. King Martyn, is of interest :

“A short time ago I prescribed for a patient—a man of about 35—suffering from rheumatic neuralgia, a mixture containing antipyrin. After I had written the prescription he remarked, ‘My doctor tells me I cannot take antipyrin, as I always get a sore mouth if I do.’ Having prescribed antipyrin in some hundreds of cases, and having never seen such a result, I ignored this statement and did not tell him I was giving it to him. The next day his pain was gone, and he felt practically well; but the following morning he turned up again to show me his mouth. He had three or four patches of superficial stomatitis on the buccal mucous membrane between the gums and the cheek, and two or three patches on the hard palate. He had no erythematous rash or other symptom of antipyrin poisoning, and the drug used was, I believe, pure.

“In the current *Braithwaite’s Retrospect* is a report of a case of pemphigus of the mucous membrane of the mouth following antipyrin, and I should imagine that my patient’s stomatitis probably started in the same way. The condition is, I believe, very rare. The whole amount of antipyrin taken did not exceed 40 grains.”

Dr. R. Immerwahr of Berlin, Germany, has reported “A Case of Antipyrin Intoxication.” (*Berlin. klin. Wochensch.*, Vol. XXXV, page 751.)

Mr. D. Gray Newton of Sheffield, England, has published his “Notes on Two Cases of Poisoning from Antipyrin.” (*British Quarterly Medical Journal*, Vol. VI, page 133.)

Antitoxin has received considerably more attention during the past year than in the previous year, and therefore it would be quite impracticable to attempt even to enumerate here every individual mention of this widespread agent. Much more attention has been rightly given this year to the question of testing the various brands offered in the market. The New York state board

of health has recently determined to have all the antitoxin manufactured in the state pass a series of tests at stated intervals. This will not only insure a proper standard of quality but determine a certain uniformity of product, and thereby a uniformity in therapeutic results. It is interesting to learn, even though it does come through newspaper authority, that much confidence is felt among the Russian peasants, for instance, in the results obtained by this mode of treating their patients. This has led to the establishment of as many as eleven laboratories there which are now engaged in the manufacture of diphtheria antitoxin alone. It is by no means to be inferred, however, that all observers are satisfied with the efficiency of this form of treatment. There is still much scepticism, and the critics are very emphatic in their denunciations at times. Dr. C. T. McClintock, of Detroit, Mich., is very outspoken in expressing his opinion of the worthlessness of the tests for diphtheria antitoxin. (*Med. News*, Vol. LXXI, page 556.) He adopted the plan of sending a bottle of this serum divided into four parts to bacteriologists of large experience in this kind of testing in different quarters of the East. One went to the University of Michigan, another to Detroit, the third to Philadelphia, and the fourth to New York city, and the returns all differed. This would look rather discouraging to those expecting much from the definite results of testing. However it would appear in general that the testimony of the great majority is in favor of the beneficial action of the antitoxin form of treatment, and many observers who have wavered in the past are now becoming gradually convinced that there is more of value in it than was at first supposed. All sceptics, however, are not as severe as Dr. McClintock. The following criticism will be found more moderate. Prof. Purjesz of Budapest, India, read an interesting paper on "A Criticism of Serum Treatment for Diphtheria" at a recent meeting of the local medical society, which has been styled as a brilliant discourse on the subject :

. . . "in which he said that although he was by no means an adversary of the treatment yet he could not consider the utility of serum injections as proved. The advocates of serum treatment maintain that since its introduction the mortality from diphtheria has diminished. The Hungarian statistics show that the mortality from diphtheria had fallen in 1895 from 22,000 to 17,000, but it had also fallen from 1892 to 1894 (before the introduction of serum) from 49,000 to 22,000. The advocates of the serum treatment further state that the relative mortality from diphtheria had

also greatly diminished and the figures, if not closely scrutinized, would seem to confirm this statement, for the statistics show that of 872 patients treated with serum 156 died—*i. e.*, 17 per cent.; whereas, of 2,889 patients not treated with serum 1,187 succumbed—*i. e.*, 41 per cent. But these figures are misleading. It is evident that all those who received injections of serum were entered in the statistics indiscriminately whether the attack had been a mild or serious one, whilst of those who did not receive injections only the serious cases were notified which had passed through the hands of a medical man, the slight cases passing unnoticed. The omission of these mild cases will amply account for the difference of the numbers. Hospital observations are fallacious on the same grounds. In the Budapest Stephanie Hospital for children the mortality from diphtheria had sunk from 70 per cent. to 20–22 per cent. since the introduction of serum, but that appears in an altogether different light when we learn that the morbidity of this disease had been steadily declining in Budapest since 1892, so much so that in spite of the increase of population it was reduced in 1895 to one half of what it had been in the year 1892. Apart from the mildness of the epidemic there remains yet another factor to account for the relative decrease of mortality. In the year 1892 12 per cent. of all children suffering from diphtheria in Budapest were treated in the Hospital for Children, whereas in 1895 the hospital cases amounted to 22 per cent. of the children suffering from diphtheria, the explanation of which is not to be sought for in the epidemic—this having been milder in 1895 than in 1892—but in the fact that many milder cases had been brought to the hospital for the purpose of the administration of the serum. Professor Purjesz, in conclusion, adduced some other striking arguments and repeated his conviction that the alleged usefulness of the serum treatment still remains to be proved." (London *Lancet*, Vol. I, for 1898, page 130.)

Dr. Louis Martin, head of the laboratory in the Pasteur Institute, related an interesting series of statistics at a conference on Diphtheria on December 21st last showing the advantageous results of the diphtheria antitoxin. (*La Médecine Moderne*, Vol. IX, page 73.)

In an address on the serum treatment and its results delivered at the annual meeting of the Southern Branch of the British Medical Association, Mr. W. E. Green condensed his experience about as follows: He collected together from his notes the results of 36 cases of tetanus treated with antitoxin, giving 25 recoveries; 40

cases of puerperal fever and allied conditions with 33 recoveries, and 11 cases of pneumonia with 9 recoveries.

Another observer relates that out of 84 persons vaccinated against typhoid fever during an epidemic, not one contracted the disease, while out of 120 who were unvaccinated under similar conditions 16 were attacked. It was also related that in 5,251 cases of the plague which were inoculated with the plague serum there was a mortality of only 1.75 per cent., whereas out of 14,830 treated by other means 20.6 per cent. died.

Dr. Diendoné has recently summarized the results of this form of treatment of bubonic plague in a paper entitled "The Results of Yersin's and of Haffkine's Experiments in Immunity to, and Cure of, Plague." (*Muench. Medicin. Wochensch.*, Vol. XLV, page 166.)

Equally good reports are heard from antivenene. At a meeting of the Medical Society of Victoria, Australia, Dr. C. J. Martin of the Melbourne University, who has been experimenting with anti-venomous serum, read an interesting paper based on a number of very careful experiments:

"He showed that the venoms of all Australian snakes contain at least two proteids; one is coagulated and rendered inert by heating to 85° C., and the other is not coagulated even on boiling. It is, however, sensitive to heat, and even momentarily boiling it diminishes its toxic property and prolonged heating destroys it. The two constituents can be isolated by filtration through a film of gelatin supported in the pores of a porcelain filter. The coagulable proteid destroys the blood corpuscles and the continuity of the capillary walls, produces intra-vascular clotting, if reaching the circulation with sufficient rapidity, and is a powerful poison to cardiac muscle. The non-coagulable constituent has none of these properties, but affects particularly nerve cells, those of the respiratory centre being especially susceptible. Cobra venom consists very largely (98.25 per cent.) of an uncoagulable proteid similar in action to the one in Australian snakes, consequently it would be expected that Calmette's serum from an animal immunized against cobra venom would have a diminished value against the mixed venom of Australian snakes; although Calmette affirmed that it was equally valuable as a remedy against the poison of all snakes. The result of Dr. Martin's experiments showed that the serum possesses some slight immunizing power against the venom of the tiger snake when administered intravenously and one hour before the inoculation of the poison. Injected hypodermically

before or coincidentally with the venom the animals (rabbits) died. The effect on the different constituents separately was then tried and he found that against the uncoagulable element the serum has a decided protective influence when injected in considerable quantity directly into the circulation just before the poison is inoculated. This power is so slight that the serum is practically valueless as a remedial agent. Dr. Martin also suggests that antitoxin remedies of all kinds, as diphtheritic antitoxin, should be introduced directly into the circulation instead of under the skin, whence they may not be wholly absorbed for twenty-four hours." (London *Lancet*, Vol. II, for 1897, page 1292.)

Up to this time there appears to be little satisfaction in treating tuberculosis by this means. Dr. Charles Denison of Denver, Col., has given some attention to this line of treatment, and read a paper before his local association in December last in which he discussed "The Direct (Tuberculin Preparations) versus the Indirect (Animal Serum) Method of Immunization Against Tuberculosis" (*Journ. Amer. Med. Asso.*, Vol. XXX, page 290), relating six cases.

One of the latest affections in which successful serum treatment has been obtained is yellow fever, and Dr. Edwin Klebs of Chicago, Ill., has been reported as discovering the amoeba of yellow fever. Dr. Joseph Sanarelli, the director of the Hygienic Institute of Montevideo, Uruguay, has continued his experiments with the serum treatment in yellow fever, and has made the following report: Eight patients were treated vigorously in St. Sebastian Hospital of Rio Janeiro, Brazil, and all recovered. Having met with such success he rendered immune all other patients, thus aborting an epidemic. No other cases occurred, he states, although an epidemic was still raging in an adjacent town. (*Annales de l'Institut Pasteur*, Vol. XII, page 348.)

It has been reported that Dr. A. H. Doty, health officer of the port of New York, has received some of Dr. Sanarelli's yellow fever serum direct from his Hygienic Institute.

As is well known by all at this time, Professor Behring has succeeded at last in obtaining a patent for his diphtheria antitoxin in the United States. He has been working for this for some years back, and the authorities at Washington have evidently concluded that he is rightfully entitled to a patent. At first sight this would seem quite unfair to the American manufacturers, but it is now learned from the chief of the Agricultural Department at Washington, that the method of manufacturing this agent which

is employed by the department, does not infringe upon Behring's patent, and therefore if the latter desires to contest this ruling, the courts will have to decide.

In a paper read by Dr. John H. McCollom of Boston, Mass., before the Massachusetts Medical Society in June last on "Antitoxin in the Treatment of Diphtheria," he summarizes tersely in about the way quite a majority of observers in this country have done. He concludes as follows:

"From an examination of mortuary statistics, both in this country and in Europe; from a clinical study of 4,200 cases of diphtheria, it seems to me that the following conclusions are absolutely correct:

"1. That the death-rate of diphtheria has been reduced to a remarkable degree by the use of antitoxin.

"2. That in order to derive full benefit from this agent it is important that it should be given in large doses early in the course of the disease.

"3. That antitoxin should be frequently repeated, until the characteristic effect is produced on the diphtheritic membrane.

"4. That antitoxin does not cause albuminuria, and that it has no effect in producing heart complications in this disease.

"5. That the physician who does not use antitoxin in the treatment of diphtheria fails to do his whole duty to his patient." (*Boston Med. and Surg. Journ.*, Vol. CXXXIX, page 153.)

The question of immunization has received very prominent attention during the past year, and the reports are beginning to be very interesting and satisfactory. Dr. Slawyck of Berlin, Germany, has reported on "The Immunization of Sick Children with Behring's Curative Serum," in which he states that from 1894 up to the present time all the children in the Charité Hospital of Berlin have been immunized against diphtheria, with the exception of a short time during the latter part of 1897. The reason it was then stopped was that the epidemic existing just at that time was quite mild, and as it was so mild it was thought that it was itself produced by the antitoxin then being given. Not long afterwards four of the children were attacked, whereas none had been effected during the immunization period. The immunization was immediately renewed, according to the previous custom every three weeks, which again resulted in no cases appearing. (*Deut. Medicin. Wochensch.*, Vol. XXIV, page 85.)

Equally good results are reported from most of the other prominent cities in Germany and also from Paris, France.

A report has been made to the Clinical Society of London, England, by a representative committee of its own selection, on the value of antitoxin treatment in diphtheria in accordance with the results obtained in the various London hospitals. (London *Lancet* Vol. I for 1898, page 1631.) The concise abstract is as follows :

“ In its main results the investigation into the use of antitoxin in diphtheria undertaken by a committee of the Clinical Society of London harmonizes with the experiences which have from time to time been published in different quarters. The summary report read by Dr. Church at the last meeting of the society does not enter into details, but gives in general terms conclusions which are eminently favorable to the value of the treatment. The committee would appear to have taken great pains to avoid fallacies and to have made a rigid selection of the reports furnished to them from various hospitals in order that erroneous inferences might be avoided. By comparison of the series of cases treated with antitoxin with another series not so treated it would seem that the use of the serum was marked by a reduction in the fatality of diphtheria from 29.6 per cent. to 19.5, a reduction most marked in patients under the age of five years. But perhaps the most striking evidence of the efficacy of antitoxin, particularly when it is early administered and in adequate amount, is to be found in the results of tracheotomy. It would seem that since its employment there has been a diminution of cases requiring tracheotomy and, what is more obvious, a very marked lessening of the mortality amongst those subjected to this operation. A fall in fatality-rate from 71.6 per cent. to 36.0 per cent. speaks volumes and by itself must carry conviction as to the powerful action exerted by antitoxin upon the local process. The committee inquired into the relative results accruing from variations in the period of the disease at which the injections were made, and also the comparative effects of different amounts injected at once, but we must wait for the full text of the report before being able to give their experience in these particulars. It was stated, however, that no connection could be discovered between the amount of antitoxin injected and the subsequent occurrence of paralysis. It is instructive to learn that in very nearly one third of the cases some form of rash, mostly erythematous, occasionally urticarial, supervened at periods varying in the majority of from six to twelve days after the injection. These rashes were accompanied by rise in temperature in about one half of the cases and in a certain number by joint-pains. As regards suppression of urine no difference was observed in the liability to

this grave event amongst those treated and those not treated by antitoxin. The general result of the inquiry is succinctly yet sufficiently stated to have been 'that in the cases treated with antitoxin not only is the mortality notably lessened, but the duration of life in fatal cases is also prolonged,' and it is added: 'The injection of antitoxin may produce rashes, joint-pains and fever; with these exceptions no prejudicial action has been observed in the series of cases investigated to follow even in cases in which a very large amount of antitoxic serum has been used.' This deliverance, modest though it be, made after most careful scrutiny of clinical facts, should go far to establish the routine employment of antitoxin and encourage the hope that as time goes on its efficacy may, by improved methods, be even more strikingly exhibited. The thanks of the profession are due to the committee and especially to its chairman, Dr. W. S. Church, and its secretary, Dr. W. Pasteur, for the manner in which their important task has been accomplished and the clearness with which its conclusions are stated."

Probably next in the attention of all practitioners, tetanus will hold an important place and much has been written about it. About as satisfactory a summing up for the year as can be found, as far as the United States is concerned, is contained in a paper read by Dr. Fred B. Lund of Boston, before the Mass. Med. Society in June last, entitled "The Antitoxin Treatment of Tetanus" (*Boston Med. and Surg. Journ.* Vol. CXXXIX, page 160), in which he concludes as follows:

"(1) Although the statistics of the antitoxin treatment of tetanus up to the present time apparently show a diminution in the mortality under this treatment, they may be legitimately criticised as on the whole insufficient in total number, in definiteness of reports, and as probably not including all fatal cases treated.

"(2) The more carefully we study them the less evidence do we find that the antitoxin treatment, and not the mild course of the disease, was responsible for the favorable course in the cases which have recovered. There is no satisfactory evidence that harm has resulted from the injections.

"(3) There is a distinct probability that in the great majority of the total number of cases treated the dose of antitoxin, especially the all-important initial dose, has been too small to have any possible effect upon the disease.

"(4) The treatment in view of the present untractability of the disease demands further trial.

"(5) There are certain means by which we can hope to make it

more effective, and these include earnest efforts on the part of those engaged in the production of serum to secure a stronger product, and on the part of those who employ it in treatment to give a sufficiently large initial dose, and to give it at the earliest possible moment. The serum should be injected directly into the blood stream.

“(6) The strength of the antitoxic preparations furnished by the Massachusetts and the New York boards of health, when first supplied, was so slight as to render it necessary to employ five hundred cubic centimetres as the initial dose.

“(7) A valuable field for the use of antitoxin lies in its employment for immunizing purposes.

“(8) The treatment of tetanus, according to our present knowledge, should consist of:

“a. Thorough disinfection of the primary focus by mechanical means, including, if necessary and practicable, amputation.

“b. The thorough local employment of such chemical antiseptics as have been shown to destroy both the bacilli and the toxin.

“c. Symptomatic treatment by sedatives, etc.

“d. Thorough diuresis.

“e. Intravenous injection of an amount of antitoxic serum which shall contain at least 500 antitoxic units at the earliest possible moment.”

This is not only an interesting paper as far as the summary goes, but for one who desires to study the literature more exhaustively in detail, it is quite valuable on account of the bibliography with which Dr. Lund closes his article.

Drs. A. Chauffard and Quénu reported a case of traumatic tetanus cured by intracerebral injections of antitoxin by the method of Drs. E. Roux and A. Borrel, in which a sixteen year old boy entirely recovered. (*La Presse Médicale*, Vol. VI, first half, page 325.)

Dr. M. Bilhaut was led to try injections of antitetanus serum into the nerve centers in traumatic tetanus by the report of a successful case by Dr. Quénu. In this case of an eleven year old girl, double craniectomy was found necessary, and intracerebral injections were accomplished, after which all the grave symptoms are reported to have disappeared, leaving the patient in a seemingly satisfactory condition. However, unfortunately she died.

It must be remembered that investigations must be pushed for some time longer before it can be definitely decided as to the value of the serum treatment in tetanus, for this modern treatment is

yet on trial, and the evidence must continue to accumulate considerably before the claims of many can be corroborated. A summary of the subject is very well put by the editor of the *British Medical Journal* (Vol. II for 1898, page 741) as follows :

“When antitoxic serums were introduced, tetanus was one of the diseases in the treatment of which their value seemed most probable. It can, however, hardly be claimed that results have fully borne out such favorable anticipations. The utility of the antitetanic serum, of which no fewer than three varieties are on the market, is inversely proportional to the acuteness of the disease, or in other words good results can only be awaited with confidence when the symptoms tend from the first toward chronicity. The reason of this appears to be the rapid production of toxin by the bacilli, even when present in limited numbers. As with syphilis the first symptom of the disease indicates that general infection has already taken place, and that the toxic products have obtained a long start. For each hour of this start the quantity of antitoxin required to avert a fatal issue must be increased almost in geometrical progression. In these circumstances it became obvious that the therapeutic action of tetanus antitoxin was in general much less than that of antidiphtherial serum, and most authors have in consequence spoken guardedly as to its value. Ehrlich's theory that the formation of antitoxins within the body arises from the affinity of toxins for certain cell elements by a mutual adaptation of molecules—the so-called ‘lock-and-key’ theory—has acquired practical importance as the result of the experiments of Dr. A. Wassermann of Berlin, Germany, and Dr. T. Takaki of Tokio, Japan (*Berlin. klin. Wochensch.*, Vol. XXXV, page 1), on the relation of the central nervous system to the tetanus poison. They find that the spinal cord and brain of every animal which they have investigated possess definite antitoxic properties in respect of the tetanus toxin ; furthermore, they can protect if injected in the form of emulsion twenty-four hours before the toxin, and can save life when inoculated many hours after it. The first clinical application of these views appears to have been made by Babes, who, in the course of a paper on Ehrlich and Wassermann's work, read before the Bucharest Scientific Society, incidentally mentions that he had administered extracts of the central nervous system in cases of tetanus with satisfactory results. The question has since then been taken up, no doubt independently, by Dr. Anton Krokiewicz of Krakau, Poland (*Wiener klin. Wochensch.*, Vol. XI, page 793), whose paper has a special value in

that it compares the old with the new methods of treatment under almost experimental conditions. It happened that Dr. Krokiewicz had in July of this year two cases of tetanus in his wards almost simultaneously; the one was treated with antitoxin, the other with a fresh emulsion of the brain of a calf. There was but little difference in the virulence of the cases, for whereas in the former (a man) the incubation period was shorter and the disease in consequence more acute, in the latter (a woman) there was more marked trismus, with consequent difficulty in feeding, and the general condition was much less good. The course under treatment was very different in the two patients. In the woman, two injections of brain emulsion representing in all about $\frac{1}{2}$ oz. of brain substance, effected a complete cure in eleven days, with no ill-effect other than the formation of two small abscesses at the seat of the second injection which was somewhat too concentrated. The man, on the other hand, received four doses of antitoxin (1 in 10,000), amounting in all to 196 c. cm., and yet was not cured for eighteen days. Furthermore, the brain emulsion produced an almost immediate alleviation of the tetanic symptoms so that the patient begged to have the injection repeated; the administration of the antitoxin, on the other hand, was followed by severe paroxysms, sleeplessness, fever, and a sense of dread which allowed it to be repeated only under the pressure of dire necessity. Although too much must not be based on the result of a single case, it seems that the injection of brain emulsion may prove to be a valuable remedy in tetanus; the latest statistics of the use of the antitoxin show 11 deaths in 22 cases." (Dr. Sigmund Erdheim, *Wiener klin. Wochens.*, Vol. XI, page 463.)

In any event a line of treatment has been opened up which may lead into a field of which it is at present impossible to define the limit.

Koch's investigation of the rinderpest for the Cape Colony government apparently has not met with the approval looked for.

In regard to the progress with the antitoxin treatment of pneumonia, Dr. Andrew H. Smith of New York has summed up the general verdict in a paper read before the Association of American Physicians in May last (*Amer. Journ. of the Medical Sciences*, Vol. CXVI, page 377) as follows: "We cannot avoid the conclusion, from this resumé of the achievements of serotherapy in its application to pneumonia, that up to the present time they can scarcely be said to amount to more than an encouragement to further effort. No really decisive results have been obtained."

There does not seem to be any very definitely favorable results in the treatment of leprosy during the past year by antileprous serum.

Dr. Holger Mygind of Copenhagen, Denmark, has written an article on the "Treatment of Ozæna by Antidiphtheritic Serum," in which he describes 10 cases by subcutaneous injection. He concludes that this form of treatment is the most effective yet known for ozæna. His mind is not yet made up as to what it is in the serum which produces the desired effect, but he proposes to continue his observations still further, although he is quite satisfied it is not due to the toxins present. (*Journ. of Laryngol., Rhinol., and Otol.*, Vol. XIII, page 379.)

Little encouragement is given from experiments with the serum treatment of syphilis, but many are still working in this line.

Dr. E. J. Frantzius has made some investigations for the purpose of finding an antitoxin for rabies. He has discovered that the bile from an animal affected with rabies contained an antitoxin far more potent than any yet described. (*Centralblat. für Bacteriol.*, Vol. XXIII, page 782.)

Dr. J. Lindsay Porteous of Yonkers, N. Y., has recommended the administration of antitoxin by the mouth in particular cases. He relates some of his cases which are of interest. He is not aware that this mode of administration has ever been tried before, and he states that his object in writing the present article is to prove that the antitoxin of diphtheria is not rendered inert by changes in the stomach, and that this is an easy method of giving it to nervous children. (*N. Y. Med. Record*, Vol. 52, page 919.)

Dr. C. Fisch of St. Louis, Mo., also advocates administration by the mouth, and has written a paper, entitled "Some Experiments on the Assimilation of Diphtheria Antitoxin," and read it before the Bethesda Pædiatric Society, in February last. He concludes as follows:

"I need not state *in extenso* the conclusions that it will be allowed to draw from these remarks. It seems, in the first place, that they tend to corroborate the theory of the chemical nature of antitoxin, and in the second place, they show that with perfect safety immunization against diphtheria may be produced by oral administration of the antitoxic serum, or the antitoxic milk. In the case of children, the latter seems preferable. On the other hand, they emphasize the fact that curative effects must not be attempted by this way of administration, on account of the slowness of absorption, or at least, of diffusion through the system;

even for prophylactic purposes (in families where one member is infected, for instance) it must be employed only with careful discrimination of the conditions.

“For speculative minds, it would be a promising task to find out why it takes so long for this substance to be diffused through the body, while almost all other absorbable chemical bodies, when in contact with the intestinal mucous membrane, assert their presence in the circulation much earlier.” (*N. Y. Med. Journ.*, Vol. LXVII, page 489.)

Rectal injections of the various serums are still undertaken, and it might naturally be inferred that if success is obtained through the upper part of the alimentary tract, it might be expected in the lower part.

For those who are interested in tabulating the cases of poisoning by antitoxin, it may be well to record here that Dr. John Lovett Morse of Boston, Mass., read an account of a case at a meeting of the clinical section of the Suffolk District Medical Society, in November last. (*Boston Med. and Surg. Journ.*, Vol. CXXXVIII, page 156.)

Anusol, claimed to be the bismuth salt of iodo-resorcin-sulphuric acid, has not been mentioned in the current medical literature of the year.

Anytin is the interesting new substance which apparently was some time ago discovered by Helmers, and now revived on account of the important group of oily bodies recently prepared from it, and the results of the examination of which in the hands of Dr. F. Loeffler of the University of Griefswald, Prussia, led to his writing a paper on the subject, which has appeared in the *Deut. Medicin. Wochensch.* (Vol. XXIV, page 149.) It is prepared as follows: Any of the hydrocarbons containing about 10 per cent. of sulphur are treated with concentrated sulphuric acid, then neutralized with ammonia, and the insoluble portion in water precipitated by alcohol. The product (called anytin) thus obtained possesses a very great solvent action on bodies ordinarily insoluble in water. The preparations made by dissolving such substances insoluble in water in anytin have been called anytols. The hydrocarbons that have been used consisted generally of mineral and resin oils, although others have been employed. It is quite reasonable to conceive that this very remarkable property possessed by anytin opens a new field, not only in medicine, but other branches of science. When perfectly dry, this article is in the form of a powder, brownish-black in color, and very hygro-

scopic. It contains 16.5 per cent. of sulphur, and 4.5 per cent. of ammonia. As one would naturally suppose, quite a list of the anytols have already been made out. A few only will be mentioned here. Thus phenol converted into soluble form by means of anytin is called phenol-anytol; cresol would form cresol-anytol (found to contain 50 per cent. of cresols). Creosote-anytol is found to contain 40 per cent. creosote, and 60 per cent. anytin. Guaiacol-anytol is found to contain 40 per cent. guaiacol and 60 per cent. anytin. Eucalyptol-anytol is found to contain 25 per cent. eucalyptol, and 75 per cent. anytin. Wintergreen-anytol is found to contain 20 per cent. wintergreen oil, and 80 per cent. anytin.

A somewhat extended series of experiments was at once conducted, with a view to determine what bactericidal power these compounds possessed. It was found that anytin itself behaved in a similar manner to ichthyol. Anytin, however, appeared to act more energetically against diphtheria streptococcus than ichthyol, but less active against other forms of bacteria. The anytols of various disinfecting substances were tried with very gratifying results, showing a great superiority in the action of the anytols over the action of the disinfecting substances themselves. For instance, meta-cresol-anytol (containing 40 per cent. meta-cresol) will prevent the coagulation of albumin on boiling. Catgut treated with a 10 per cent. solution of this latter anytol does not appear to be damaged in any way. The skin is hardly affected by a solution of this meta-cresol-anytol up to 3 per cent. in strength, and a 1 per cent. solution has no effect upon the skin. It is well known that a 3 per cent. carbolic acid solution, which in that strength would be inferior in action, has its definite effect on many skins. Therefore, the action of this anytol for disinfecting the hands was definitely proven. Again, it acts very effectively on all infected wounds, and on cotton-wool used as plugs in the nostrils in treating ozæna. The uterine cervical mucous membrane and the mucous surfaces of the vaginal and male urinary tract do not show any irritation after the application of a 1 per cent. solution. From the favorable results obtained by using ichthyol in chyluria, it would be in order to try this meta-cresol-anytol, with the expectation of even more favorable results. Investigations are being continued on certain other pathological conditions, with promising results, and the whole series of compounds are certainly of great therapeutical interest.

Apolysin, the combination of phenetidin and citric acid, has

not appeared before the medical profession in print for the past year.

Argentamin (ethylene-diamin-silver phosphate), the silver nitrate substitute, has received little special attention during the past year, although it is still in use by the genito-urinary practitioners. It has, however, during the last few years been used in ophthalmic practice. Dr. Hoor has made a report of his cases, which have now extended over several years, and amount in all to 328, which include all classes of conjunctival affections, as they appeared in his clinic. He found that it was superior to silver nitrate, as being less irritating, penetrating much deeper, and being more powerfully antiseptic. His custom was to either drop a 5 per cent. aqueous solution into the eye twice a day, or paint it on the surface. He frequently applied it oftener. He calls attention to the fact that any black stains occurring from its use may be readily removed by the use of potassium iodide.

Argentol, the new antiseptic combination of oxy-quinolin and metallic silver, has not appeared to take its place as a substitute for actol and itrol as recommended last year, for little has been heard of it.

Argonin, the bactericide formed by mixing silver nitrate with a combination of sodium and casein, continues to occupy a prominent place before the medical profession. Dr. Horace Bigelow of New York reported at a meeting of the Society of the Alumni of Bellevue Hospital on January 5 last, a series of cases of ophthalmia treated with this agent. He said that his cases had not done well under the usual methods of treatment—*e. g.*, cold applications, and the use of nitrate of silver. The former was disagreeable to the patient, and required the constant care of a nurse. The second method was painful and tedious. For some months past, in the children's ward of Bellevue Hospital, he had been using argonin, a plan of treatment that had been introduced there by Dr. E. L. Dow. Thirteen cases of purulent ophthalmia in infants had been so treated. Three of these, developing in foundlings in the wards, had been treated in this way from the earliest time of the inflammation, and had been cured in seven days. In the other cases, the average duration had been thirteen days. The first case subjected to the treatment had previously resisted the usual methods, but had quickly improved under the use of argonin. A carefully prepared 3 per cent. solution of argonin had been used. A minim dropper having been inserted deep under the eyelid, enough of the solution should be instilled to thor-

oughly irrigate the eyelids twice, and, later, once in the twenty-four hours. Between these applications, the lids were kept constantly clean with boric-acid solution. Fifteen grains of argonin contained as much silver as a grain of the silver nitrate. It was a white, amorphous powder, easily soluble in warm water. It was not irritating, and it formed no slough on contact with the mucous membrane, and, therefore, no neutralizing agent was required after its use. From his experience with argonin in these cases, Dr. Bigelow had concluded that it was a very valuable agent in the treatment of purulent ophthalmia, because of its mild, but thorough and rapid, curative action.

Some discussion followed and Dr. Bigelow closed it with the statement that the diminished irritation and danger were the chief advantages of the argonin treatment. (*N. Y. Med. Journ.*, Vol. LXVII, page 504.)

The writer begs leave to suggest that the marked irritation frequently following the use of silver nitrate may probably be due to the use of the ordinary crystalline silver nitrate which is often found to be slightly acid, whereas if on the delicate, sensitive tissues like those of the eye, a solution of the moulded silver nitrate of the U. S. P. be employed, far less irritation and dangerous effects will be observed. This fact has been proved in more than one case, and repeated observations are invited.

Drs. Frank Gray and William R. Thompson have reported on "Argonin vs. Boric Acid in Acute Suppuration of the Middle Ear" (*Texas Courier-Record of Medicine*, Vol. XV, page 411), in which the following conclusions are drawn :

"1. Argonin solution is highly antiseptic ; boric acid, if at all, very slightly so.

"2. Argonin in solution can be forced through a small perforation in the drum-head, thus reaching every part of the tympanic and eustachian tube. In such a case boric acid lies inactive in the external auditory canal.

"3. Argonin can be used to flush the middle ear and tube, thus reaching every part of the inflamed tract, carrying out with it all products of inflammation and speedily relieving the attendant fever and pain.

"4. Argonin excites a positive and decided effect upon the suppurative process. Boric acid possesses this power but feebly.

"5. Argonin stimulates the closing of perforations in the drum-head. Boric acid has no such action.

"To obtain this effect, it is, of course, necessary that the solu-

tion (2-5 per cent.) should pass *through* the middle ear, in order that it may be brought into contact with *all* the tympanic membrane. This is usually not difficult. Having cleansed the canal in the usual manner, say with carbolyzed water, or solution of hydrogen peroxide, the drum cavity is to be emptied by Valsalva's method, or by the Politzer bag, and the secretion thus blown out removed with the cotton carrier. The auditory canal is then filled with the argonin solution and covering the outer end of the canal with the tragus, at the same time making strong pressure upon it, the solution is forced through the perforation into the middle ear, thence to the throat by way of the eustachian tube. The application is entirely painless."

Dr. Niessen, in the course of his comparative experiments with some new substitutes for silver nitrate in the treatment of gonorrhœa, reports in regard to this agent that it undoubtedly influences the growth of the gonococcus, although less in effect than silver nitrate. It has, however, the very distinct advantage of being quite unirritating.

Dr. Stark of Thorn, West Prussia, has reported that a much prompter and more effective action in gonorrhœa is secured by combining this agent with potassium permanganate. He reports that if the urethra be rinsed daily with a solution of potassium permanganate the tissues are softened and the penetration of the argonin is favored. This latter is injected in the form of a 2 per cent. solution three times a day, with marked good effect under these conditions.

Aristol (annidalin) hardly need be called to the attention of practitioners generally, for its use is quite universal. However it may be of interest to some to read an article entitled, "Scalds and Burns," by Dr. J. Abbott Cantrell, published in *The Monthly Cyclo-pedia of Practical Medicine and Universal Medical Journal* for May, 1898 (Vol. 1, new series, page 192), in which he speaks of *aristol* among other agents as presenting the advantage of being useful in burns of the second and third degrees where other remedies have failed. He apparently verifies Dr. Sidney V. Haas's statement that the pain is almost instantly relieved and that healing is rapid.

Bananina has not been heard of under this name during the past year, but the use of bananas has met with some attention. Dr. Wm. C. Ussery of St. Louis, Mo., has called attention to the fact that they are an excellent food for typhoid fever patients, for the reason that there is such a small part of excrementitious mat-

ter in their composition that they do not irritate the ulcerative condition of the mucous membrane of the intestines. Almost the entire amount of the fruit, as eaten, is at once absorbed as nutritive material.

As is well known to the medical profession, Dr. Robert Koch of Berlin, Germany, has been pushing his investigations into the cause of the East African plague, and in his report last July to the German society of public hygiene, he made some very odd statements about several points, one for which was that the banana and banana plantations were the breeding grounds and the means by which this plague is spread. This is evidently very odd reasoning, for it is well known that the plague exists in countries where the banana is unknown and also the plague is unknown in many sections of the world where the banana enters so largely into the daily food of the inhabitants. Such a statement as this is in keeping with another of his statements, that the plague will not survive the advance of civilization. He apparently does not consider what this word civilization includes nowadays, for unless counteracting influences were brought to bear, one element alone of the progress of civilization—that of the introduction of railway transportation—would tend to spread the disease and would rapidly disseminate it throughout soil ready to receive it.

Benzonaphthol (β -naphthol benzoate), the intestinal antiseptic, has undoubtedly been made use of throughout the past year by many practitioners, but little mention has appeared in the medical literature. One article, however, may be noted here, and that is an original communication contributed by the *Western Medical and Surgical Gazette* (Vol. 1, page 203) on, "The Treatment of Chronic Enteritis," by Dr. E. P. Hershey of Denver, Col., in which he mentions several agents having been employed by him with some effect, but he concludes that this agent if given in 6 grammes (about 1 1-2 drachm) doses in the 24 hours, is the ideal remedy for intestinal fermentation, and, what is quite important, that this large quantity is not injurious if not too long continued. His conclusions are as follows :

"Chronic enteritis is an affection impossible to overcome just so long as irritation continues. This irritation is due mainly to fermentative changes brought about by pathological conditions in the intestinal glands resulting in vitiated secretions. The prevention of excessive fermentation takes away the irritation and allows the uninterrupted restoration of the glands affected. This

result is best accomplished by means of a remedy that will act locally upon the glands and will prevent excessive fermentation.

"The two best-known remedies for this purpose are benzonaphthol and the bismuth salt of tetra-iodo-phenol-phtalein, the latter having the advantage over the former, that it persists in being a local remedy in the intestinal canal, whereas the former, though acting locally, liberates benzoic acid in sufficient quantities to become sooner or later a renal irritant."

Benzosol (benzoyl guaiacol), another recommended intestinal antiseptic, has not been much alluded to during the past year. It has, however, been one of several agents used in the internal treatment of rheumatoid arthritis.

"Dr. Gilbert A. Bannatyne has latterly experienced a change of belief in regard to the relief and curability of this disease. Assigning a micro-organism as the cause of it, and failing an antitoxin, he has employed drugs which possess high eliminative powers and which have been found useful in other microbic conditions. These he has sought for in the phenol group of antiseptics, and particularly creosote or some of its compounds or derivatives. Creosote and guaiacol have been abandoned because they produce great intestinal irritation, are caustic, and coagulate albumin. In their place he employs creosote carbonate, guaiacol carbonate and benzosol; none of these is caustic, and absorption takes place gradually from the intestines." (*Edinburgh Med. Journ.*, Vol. III, new series, page 60.)

Doses of 260 milligrammes (4 grains) three times daily he found could be increased to six times that amount, but it was found to be feebler in action than the guaiacol carbonate. He found that apparently all these agents act locally on the alimentary canal before absorption and afterward by favoring the elimination of the toxic albumins with which they combine.

Bismutan is the coined name for a compound resulting from the mixture of bismuth, resorcin and tannin. This combination has been in use before, but it was not deemed necessary to have a name adopted for such a mixture. It forms a bright-yellow powder quite odorless, slightly sweet in taste and insoluble in water. It is being compounded in Zurich, Switzerland. It is recommended for the treatment of diarrhœa in children, producing good effects in 24 hours.

Borol has been practically unheard of during the past year throughout the prominent current medical literature.

Bromoform seems to be gaining in its reputation, particularly

in the treatment of pertussis. It still shows unfortunate behavior at times, and therefore some care is yet necessary in using it. Dr. A. Marfan of France states that on the whole it is the best remedy for this affection known at this time. He admits, however, that it fails in its action occasionally, but in such cases he finds an efficient mixture in antipyrin, belladonna, and syrup of tulu. In the use of bromoform he reports having in a few cases reduced the duration of the attack to three weeks, and he almost invariably loosened the cough when using it. Such symptoms as diarrhœa, vomiting and even drowsiness should not necessarily discourage the practitioner.

There are still many practitioners who consider it a dangerous agent and poisoning cases are still reported. One of special interest is of Dr. Müller of Munich, Bavaria, for he was enabled to obtain an autopsy. (*Muench. Medicin. Wochensch.*, Vol. XLV, page 1,211.)

Camphor is still an article of great importance to the medical profession as well as for technical purposes, and as mentioned here for several years past, its scarcity is becoming a serious matter. It will be interesting therefore to note that the artificial manufacture of this article has now become quite an established fact, for the process, which has now been perfected and patented by a set of capitalists, assures a much finer article than the previous artificial productions. The time is not quite ripe for spreading this upon the market, but from promises now made, many months will not elapse before very definite evidence will be brought forth.

Little special attention has been paid in the literature to camphor. However, a communication may be worth recording here which was addressed to the *British Medical Journal* (Vol. II for 1898, page 84), by Mr. W. H. Spurgin of Newcastle-on-Tyne, England, in which he calls attention to "the camphor habit and its dangers."

A naphthol compound of camphor has been announced although no special clinical reports have been made of its use. It takes the form of 1 part naphthol in fine powder and 2 parts camphor. The mixture is warmed gently until a homogeneous liquid is obtained. It is then filtered and preserved in well-stoppered yellow glass bottles.

Camphoroxol is the compounded name given to a mixture of 1 per cent. of camphor and 3 per cent. solution of hydrogen dioxide which is offered as a powerful germicide. To this is added 32 per cent. of alcohol to form the complete mixture.

Dr. Wagner of the Charitè Hospital, Berlin, reports on his use of a 10 per cent. solution of this agent in the treatment of abscesses and suppurating wounds. When the abscess is opened it is recommended to irrigate with this solution and place a pad of cotton moistened with it over the surface, kept in place by a bandage. This dressing is renewed every second day. It appears that all purulent discharges rapidly cease, resulting in healthy granulation. It acts as a deodorizer and is entirely free from any irritation. It appeared to be especially effective in mastitis. Anthrax spores, according to the investigation of Dr. Beck, are killed within three hours, which does not occur when either camphor or hydrogen dioxide are used by themselves. The alcoholic solution appears to keep and the recorded surgical cases now amount to 200 in all, in which sterilized gauze was used.

Allied mixtures, which will be alluded to in proper alphabetical order, are menthoxol and naphthoxol. (*Deut. Medicin. Wochensch.*, Vol. XXIII, Therap. Beilage, page 74.)

Captol is the name given to a proprietary preparation consisting of a condensation product of tannin and chloral. It appears as a dark brown hygroscopic powder, difficultly soluble in cold but rapidly in warm water and in alcohol, but decomposed by alkalies, unaffected by acids. Upon analysis it is reported to contain not only the constituents stated, but small quantities of resorcin and salicylic acid.

Dr. P. J. Eichhoff of Elberfeld, Rhenish Prussia, has reported his experience with this mixture. He notes that it combines the astringent action of tannin with the antiparasitic action of chloral. He has made use of it in the form of a 1 or 2 per cent. solution in alcohol as a lotion for the treatment of seborrhea, applied twice a day. It seems to act with none of the disadvantages of the two ingredients used separately. It acts effectually also in preventing the formation of dandruff, in reducing the secretions of the sebaceous glands and in preventing premature baldness. He found that it apparently possessed no disadvantages whatever and acts well as a prophylactic. It has an agreeable odor and therefore is not unattractive to women. (*Deut. Medicin. Wochensch.*, Vol. XXIII, Therap. Beilage, pages 68 and 78.)

Chinaphthol (quinine β -naphthol- α -mono-sulphonate), formed by combining quinine and β -naphthol and recommended last year as a new intestinal antiseptic, has not been heard of during the year past in the current medical literature. The reports of last year from hospitals and private practice, in typhoid fever and dysentery,

have either not been as favorable this year or they have been so disappointing that the agent has been dropped.

Chinosol, the antiseptic, disinfectant, deodorizer and bactericide is still before the medical profession, but particularly before the veterinary profession. Dr. F. Hobday of the Royal Veterinary college of London, England, discusses the therapeutic and toxicological effects of this agent. He has made extensive use of it during the previous nine months both in his canine and equine clinic. It was used as an antiseptic on wounds of all kinds, in the form of solutions varying from 1 in 60 to 1 in 1,200 with most satisfactory results. The strength found to give the best results was from 32 to 65 milligrammes (1-2 to 1 grain) to 30 cc. (1 fluidounce).

Upon fetid and ulcerating wounds a proportion of 1 in 480 speedily caused a healthy appearance and entire absence of pus after applications made once or twice per day. In treating wounds in different parts of the same animal, opportunities were often gained to note the effects of the solution of this strength in comparison with those of lysol and creolin with the result that chin-sol gave decidedly the best results. As a dry dressing in the form of powder when mixed with either boric acid, zinc oxide or starch and then compared with iodoform used in a similar manner, the sequelæ appeared to be about the same. As a disinfectant to the hands, skin, and suture threads, a solution was used varying from 1 to 1,000 to 1 in 60 without any signs of irritation either to the hands of the operator or the skin of the patient. Care must be taken, however, with instruments, as on several occasions Dr. Hobday reports that the instruments lost their edge and the steel parts became coated with greenish-black spots which were troublesome to remove, and in those instruments which had white bone handles the latter became discolored and rough to the touch. The solution therefore recommended for such purposes consists of 1 in 1,200 and if the instruments are to remain in it for anything like an hour, this strength should certainly not be exceeded. As a deodorizer for the hands or for fetid wounds, solutions of the same strength as those used for disinfectant purposes act satisfactorily. Details of several illustrative cases were related and the author sums up the conclusions to which his experience has led him as follows :

“(1) That chin-sol acts well as an antiseptic, disinfectant and deodorant when used in certain proportions. (2) That its action is better marked when used as a lotion than when used as a powder. (3) That the powder is not suitable for use on fresh wounds

unless diluted in some way or other. (4) That for the disinfection of instruments care must be taken not to make the solution too concentrated. (5) That the drug possesses toxic properties. (6) That if used subcutaneously in too concentrated a form it will produce local irritation and swelling. The strength recommended for subcutaneous injection in human practice is from 1 in 600 to 1 in 200. (7) That the cat is very susceptible to its action, and that in this animal much more care is necessary to guard against toxic symptoms than in the case of the dog. In the cat, if subcutaneously injected, the extreme limit of dose should be one-sixteenth of a grain for each pound body weight, and in the dog one-eighth of a grain per lb. (8) That chinolol is not rapidly absorbed from the unbroken skin of the dog, and can be applied for several days in succession even in fairly concentrated solutions to the skin of this animal without producing eruptions or sores. (9) That the chief symptoms of poisoning are: Sneezing and coughing, an increased flow of thick, ropy saliva, subnormal temperature, staggering gait commencing with loss of motor power in the hind quarters, great prostration, and ultimately death from failure of the heart's action. (10) That the chief *post-mortem* characteristic is the smell of chinolol on or in some part of the body; whilst another symptom to be looked for is the presence of frothy saliva in the pharynx, œsophagus, or stomach." (*Epitome of Brit. Med. Journ.*, Vol. I for 1898, page 91.)

To aid those who would desire to look up the whole subject in review, it may be of advantage to mention here that a year ago Dr. A. G. Cipriani of Cagliari, Italy, wrote quite extensively on its internal administration in human subjects and recorded his results in the *Allgemeine Medicin. Central-Zeitung*, (Vol. 66, page 953) where he stated that rapid and apparently permanent improvement resulted from the administration of this agent both by the mouth and injected locally for the treatment of tuberculosis.

Mr. Alfred Clark of Cerne House, Leicester, England, reports in a letter to the editors of the London *Lancet* that he has used it regularly and almost exclusively in operative and general surgery, and in midwifery practice. He has always found it a most reliable and efficient antiseptic, with the advantage over carbolic acid and per-chloride of iron that it does not irritate the skin, but with the one drawback that it stains the instruments. (London *Lancet*, Vol. I for 1898, page 835.)

Chinolol is the coined name for a combination of quinine and chloral introduced by a German chemist as an antiseptic equal in

potency to mercuric chloride. It is spoken of as a *compound* of an oily consistency, but there are evidences to more than conjecture that it is simply a mixture of quinine sulphate and chloral hydrate.

Chloralose (anhydro-glucoclhalal)—the hypnotic—continues to be used with little abatement, but it has not been commented upon specially under its own head throughout the medical literature of the year.

Chlor-Phenols (mono- and para-chlorophenol) have not been found worth special mention in the medical literature of the year. What little did appear last year had relation more particularly to the mono compound. In relation to the para compound, Dr. Dentu has taken pains to review the statements of Girard relating to its toxicity and antiseptic properties. Dr. Dentu finds that it is much more toxic than was reported by Girard—the poisonous dose being 250 to 260 milligrammes (about $3\frac{1}{2}$ to 4 grains) per kilogramme (about $2\frac{1}{2}$ pounds), while Girard gave one gramme (15.4 grains) per kilogramme. He calls attention to its rapid absorption and making itself evident by darkening the urine, therefore its employment requires careful watching, but under certain conditions it is to be preferred to carbolic acid.

Citrophen (phenetidin citrate) has been unheard of in the prominent medical literature of the past year.

Cocaine and its salts, but particularly the hydrochlorate, hold their own very firmly in the estimation of the medical profession. The very evident straining, however, on the part of manufacturers for absolute purity, which is to be commended on general principles, has evidently led many of those manufacturers as well as the practitioners themselves into a misconception of their needs in relation to the therapeutic effects looked for. This misconception prevails in relation to many other medicaments besides cocaine, but to speak now in direct relation to cocaine hydrochlorate which is under comment here, it is well to bear in mind that the evidences have now become quite conclusive that the best effects are obtained when the whole of the ether-soluble products of the crude cocaine are made use of, rather than when the attempt is made to carefully isolate only what is called cocaine. Careful comparative experiments have now accumulated in such numbers as should convince the careful observer that if the crude cocaine is simply washed with pure ether and the salt made from what remains after evaporating the ether, the efficient agent is obtained for local anæsthesia. The pure crystals offered by many manufac-

turers are no doubt very attractive, and as stated above should be approved of on general principles, for any leaning toward purity should be encouraged rather than discouraged. However, when better results are obtained by a different process, the question must be looked at in a different light.

At the recent meeting of the Section of Ophthalmology of the British Medical Association, Dr. Adolph Bronner of Bradford, England, read a paper on "Crystals of Cocaine in Preference to Solution." An abstract of this paper appears in the *British Medical Journal* (Vol. II for 1898, page 490) in which he states :

"In most operations on the eyeball we use a $2\frac{1}{2}$ per cent. solution applied several times. In strabismus operations a 2 to 10 per cent. solution is often injected under the conjunctiva. Toxic effects are apt to follow, and the distension alters the parts and renders operation more difficult. For most operations on the conjunctiva I use cocaine crystals in preference to the solution. For deep operations, such as iridectomy in glaucoma and extraction of cataracts, the crystals are much more efficacious than the solution. The pain is less and there is less tendency to spasm of the ocular muscles and consequent loss of vitreous and prolapse of iris. About $\frac{1}{4}$ gr. of the hydrochloride of cocaine is applied to the corneo-scleral junction where the incision is to be made. The eyelids are kept open for a few seconds, then closed four to five minutes. I also use the crystals in ulcer of the cornea and when using the galvano-cautery. In tenotomies or advancements the operation is rendered painless by the use of cocaine crystals. I have also used them in several cases of enucleation. As the crystals cause a severe burning pain, it is first necessary to apply a weak solution. I have never seen any toxic effects. Some allege that a $2\frac{1}{2}$ per cent. solution induces complete anæsthesia, and that no better results can be obtained by a stronger solution or by crystals. This has not been my experience, and I have brought the subject forward in the hope of obtaining the opinion of others who have tried the different strengths of cocaine solutions and the crystals."

In the discussion which followed, the following points were brought out :

Mr. Marcus Gunn pointed out that a weak solution of cocaine was necessary before using the crystals. The crystals caused pain at first, and might also produce local ulceration. For some reasons, then, a strong solution was to be preferred to the crystals.

Dr. McGillivray said that in America suprarenal capsule was given to aid the action of cocaine. He had tried it himself, first, in a case of absolute glaucoma, in which chloroform could not be given; the result had been very good. He dropped a weak solution into the conjunctival sac alternately with cocaine.

Dr. Reeve (Toronto) said that suprarenal extract had the great advantage of acting as a styptic, hæmorrhage was almost entirely prevented by its use.

Dr. Bronner, in reply, said that after insertion of a crystal of cocaine the lids should be held apart for a time.

Dr. Samuel Theobald of Baltimore, Md., has deemed it timely to write a word of warning about the too free use of cocaine in the treatment of diseases of the eye (*Bulletin of the Johns Hopkins Hospital*, Vol. IX, page 193). He enumerates three cases and concludes with the following paragraph:

"I have thought it worth while to report these typical cases, because I am sure that it is getting to be a very common thing for the general practitioner to prescribe cocaine indiscriminately in eye diseases, and, as I feel that its field of usefulness is so limited, a word of warning upon this point seemed to me not amiss."

A paper was read at the Orleans Parish Medical Society in May last on "The Abuse and Dangers of Cocaine," by Dr. W. Scheppegrell of New Orleans, La. (*Medical News*, Vol. LXXIII, page 417.) He closes with the following very pertinent and timely remarks:

"In the majority of cases in which the cocaine habit is established a prescription of the physician is responsible for the evils which result. When such a remedy is placed in the hands of a patient for an ordinary coryza, hay-fever, and many other conditions in which there is transient or only apparent benefit from its use, the habit is easily contracted, and many druggists, unfortunately, are prepared to supply all of the deadly drug that the patient may demand. In view of these considerations, the rule has a substantial foundation that cocaine should never, under any circumstances, be prescribed for the patient's use, and above all, for the nasal cavities, where the application is made with such facility and from which many of the most severe cases have resulted.

"A peculiar phase of the cocaine habit which has developed in New Orleans and in a number of other cities in the South is the contraction of this habit by the negroes. The extent to which this has spread can be easily verified by druggists and in police circles. It is not used in the manner generally prescribed, but a few crystals of the drug are snuffed into the nostrils, not on account of

its contractile effects on the nasal mucosa, as is usually the origin of this habit in the Caucasian, as the nasal passages of the negro are normally quite patulous, but on account of its exhilarating effects. The physical and mental wrecks which soon result from this vicious habit attest to its pernicious effects.

“ While admitting the danger and evil results of the abuse of this drug, we should not, on the other hand, go to the extreme in condemning it in its entirety, as has recently been done on several occasions. That this should be the case, however, is not unnatural, being the return swing of the pendulum of the early enthusiasm with regard to it. What is needed is that one should have a proper realization not only of the benefit but also of the danger of its application. The medical profession should be made thoroughly acquainted with the complications which may arise from the use of cocaine, and the evil of placing such an agent in the hands of a patient. The druggist should be compelled to restrict the sale of this as well as of other toxic drugs to the prescription of the physician. As stated before, however, cocaine should never be placed in the hands of the patient under any circumstances, as the habit is so easily acquired. In this manner we may retain the use of a valuable drug, and, by exercising proper care, eliminate its evil effects.”

Then followed a carefully prepared list of forty-four references in the form of a bibliography.

A correspondent to *Nature* writes (Vol. 58, page 435) that it might be of interest to know that cocaine is a remedy for wasp and bee stings. It acts apparently not only as a temporary local anæsthetic, but seems also to have the power of destroying the poison of the sting. He used cocaine tabloids hypodermically upon a lady who was badly stung by a wasp. This lady apparently was very susceptible and such stings had considerable systemic effect upon her, not only producing a very large and painful swelling, but making her feel more or less unwell for two or three days. One tabloid dissolved in a few drops of water, and applied with the finger at once, almost removed the pain; a second, applied an hour or two after, completed the cure. A few days later he found the cocaine equally effective in the case of a young girl who had been severely stung. Since then he has kept a small bottle of a strong solution of cocaine ready for use, and it has always proved effective. It should, of course, be applied as soon as possible, but he found that it gave great relief seven or eight hours after the sting, even though the solution had been kept for two years.

Cosaprin, closely allied chemically to acetanilid,—one of the newest antipyretic agents of last year—has been unheard of in the year past. Only meager data were given last year and apparently nothing has been added during the year past.

Creosotal (so-called creosote carbonate) has apparently started up somewhat from apparent obscurity during the past year and has been noted more frequently in the medical literature.

“Dr. Nordt has published full details of the very favorable results obtained by Professor von Leyden, of Berlin, in the treatment of phthisis by creosotal. The medicine was given in gradually increasing doses commencing with five drops three times a day and three drops being added daily until the quantity of twenty-five drops three times a day was reached. This dose was continued for a period varying from one to four weeks, after which the quantity was reduced and increased again. The night-sweats and fever of phthisis obviously became less under creosotal, while from week to week the bronchial secretion and cough were perceptibly diminished and the physical symptoms of phthisis disappeared completely in two cases in which the treatment had been continued for eight months and ten months respectively. Creosotal is perfectly free from the disadvantage of creosote, no unfavorable effects on the stomach or intestines having been observed in any case.” (London *Lancet*, Vol. II for 1897, page 1,472.)

Dr. Hugo Goldmann of Brennbeg near Oedenberg, Hungary, has had some experience in the use of this agent and has published his results in a paper entitled “The Treatment of Tuberculosis of the Lungs by Cresote Carbonate and Ammonium Sulpho ichthyolate.” He finds the following formula agreeable to patients, and therefore does not hesitate to recommend its use :

Creosote carbonate	15 grammes (about 4 drachms)
Ammonium sulpho-	
ichthyolate .	15 “ (“ 4 “)
Glycerin . .	30 “ (“ 1 ounce)
Peppermint water	10 “ (“ 3 drachms)

The dose is from 10 to 30 drops given three times a day in a little wine. His very significant remark that he has found gratifying success among the peasants in agricultural and mining districts, where hygienic influences and fresh air are important elements furnished in the treatment, is in keeping with the observations made by most careful observers now-a-days when pulmon-

ary tuberculosis is treated. Cases of advanced tuberculosis with evidence of cavities being present do not respond to this agent or any other, in his experience. (*Wien. klin. Wochensch.*, Vol. XI, page 817.)

Dr. Edmond Chaumier of Tours, France, has recently written on "Creasote and some of its derivatives" (*London Lancet*, Vol. 1 for 1898, page 222), and in treating of several of the derivatives speaks as follows about creasotal :

"So recently as 1892 creasotal was still considered a curiosity of the laboratory. Its existence was communicated to me by one of my friends, an expert in chemistry, at a time when I was endeavoring to find a remedy for phthisis easily administered to children. Creasotal being a neutral carbonate of creasote, I assumed that it might be found useful, but I had great trouble in procuring it, and only after a long correspondence with Dr. Von Heyden, in whose laboratory it had been discovered, the latter agreed to have some creasotal made for my experiments. As soon as I had carried out my tests I made it known that creasotal was destined to supersede creasote and my prediction is now almost an accomplished fact. The result of my researches has been communicated to the academy of medicine, the congress of tuberculosis, the association for the advancement of science and the international medical congress at Rome. In every country my experience has been put to the test and numerous observations by physicians have been published everywhere. They all agree that creasotal is a medicament as efficacious in the treatment of tuberculosis as creasote but without the latter's objectionable qualities. Like creasote it increases the appetite, diminishes the cough, facilitates nutrition, and stimulates the increase in weight. Its advantages over creasote are that it can be used indefinitely without causing any gastro-intestinal troubles.

"Creasotal is a compound in the form of a carbonate of all the substances found in creasote. In the digestive organs, and particularly in the intestines, it splits up into creasote and carbonic acid. This process takes place slowly and the creasote set free is absorbed, as, and when, generated over the whole length of the intestinal canal. On account of this property creasotal should be given as an intestinal antiseptic in cases of typhoid and puerperal fevers. Creasotal is a viscous liquid, which, however, can be made fluid by means of a hot-water bath. It has a very slight tarry taste; its oiliness is too slight to form an objection. When weak doses are required it can be given in the form of capsules of

seven and a half grains. I myself, however, prefer strong doses, and therefore use pure creasotal by teaspoonfuls. Most patients will take it readily in that form, but with some it has to be covered by means of jam or even given in wafers. It can also be given in the form of a solution with oil, in emulsion with the yolk of eggs or mucilage of acacia or mixed with a light claret or hot milk, but I prescribe it by preference in the pure state. With creasotal it is possible to proceed to a thorough course of creasote-therapy. The maximum doses of Burlureaux can be exceeded without risk and such doses can be taken by the mouth. In exceptional cases creasotal can be injected subcutaneously. For this purpose I use pure creasotal previously warmed. Doses of 75 grains can thus be injected morning and night. The injections can also be administered by the rectum either as pure creasotal or as an emulsion made with the yolk of an egg. When the patient takes creasotal internally by the mouth, which is the method to be preferred, I give a teaspoonful morning and night for adults or in some cases even three times a day. For children under ten years of age the maximum should be two teaspoonfuls per diem and under that age I give only half doses. The above doses have been found acceptable by practitioners generally. During the year 1897 I used creasotal and guaiacol carbonate as a pulmonary antiseptic in cases of ordinary bronchitis and intend to publish a treatise on this subject shortly. As a large proportion of the creasotal is eliminated in the urine (which is shown by the odor and the dark color of the urine of many patients), I believe that it can with advantage be used, like salol, as an antiseptic of the urinary canal. I have used it in blennorrhœa, but further experiments are necessary in all cases of urinary infections. In two cases of incontinence of urine in children, the administration of creasotal has, within my knowledge, effected a cure but in other cases I have had no success. For dressing wounds and for treatment of tuberculous or osseous affections, or those of the nerve tissue, the use of creasotal can strongly be recommended as an injection around or into the diseased tissues in place of the chloride of zinc recommended by Lannelongue. It must be admitted that the odor of creasote given off by the patient under treatment with creasotal is a disadvantage, but this, after all, is only very slight. As contraindicated, I only know of fever and diarrhœa. Some practitioners recommend the use of creasote and creasotal in cases of fever, but I do not agree with them."

Dr. R. Seifert of Radebeul, Germany, writes to the editors of

the London *Lancet* (Vol. I for 1898, page 960), criticising some points made by Dr. Chaumier as follows :

“ Dr. Chaumier recommends that creasotal be taken by teaspoonfuls and considers the use of the drug contraindicated only in fever and diarrhœa. According to the experiences, however, which we have been made acquainted with by the publications of the University Clinics of Berlin, Vienna, and Munich, these contraindications do not exist ; on the contrary, the action of creasotal and guaiacol carbonate is very favorable upon the fever of phthisical patients, this disappearing after a relatively short period of treatment with these drugs. The cause by which Dr. Chaumier was led to believe these drugs contraindicated in fever probably lies in the fact that he employed larger doses than were necessary. It is neither necessary nor is it useful to take the creasotal by teaspoonfuls. The same remedial effects are obtained with the administration by drops, as introduced by Professor von Leyden of Berlin. These small doses, besides being less expensive, are also much better borne by all patients, whereas the strong doses as used by Dr. Chaumier cannot be borne by many patients.”

The *Charité Annalen* (Berlin, 1897) recently contained an interesting report on the results obtained with creasotal (creosote carbonate) in the University Clinic of Professor von Leyden. The conclusions arrived at by the experiments made under the direction of the chief surgeons of this clinic show that the remedial effect of the drug is not a merely symptomatic, but a specific one. After the administration of creosote, which drug was formerly also used by Professor von Leyden, it has always been noticed that the appetite disappeared, the general health grew worse, and symptoms of intense disturbances of the stomach and intestines soon followed. The creasotal was free from these noxious by-effects. The following mode of administration was adopted: Each patient began with five drops, three times daily, increasing the dose three drops every day until twenty-five drops were taken at a dose. At this they were kept for from one to four weeks—in some cases even for several months; then the dose was diminished in a similar ratio until only ten drops were taken thrice daily, and then eventually the ascending scale was begun again.

The results obtained in von Leyden's clinic are fully detailed in the above-mentioned *Charité Annalen*. Though the greater part of the treatment was carried out during the winter months, when the climatic influences were unfavorable, very good results were, nevertheless, obtained. The general condition of the patients was

markedly improved; fever, night sweats, and all the bad symptoms disappeared entirely after six weeks of treatment; the appetite rapidly increased. Even in cases where the patients had taken creasote before with the effect of causing a complete loss of appetite, under creasotal the appetite increased from week to week. Very much the same thing can be said of the weight, in which up to sixteen pounds were gained in three months. Upon the night sweats and the fever the action of creasotal was very favorable. Cough and expectoration gradually diminished, and finally disappeared altogether. Wherever the treatment was continued for over six months, a marked improvement of the local condition was noticed. The lungs in these cases were partly cured. In some cases, the physical symptoms of phthisis disappeared entirely after a treatment of from six to eight months, so that a perfect cure was obtained, and the lungs of these patients were perfectly healed, and quite normal again. Considering that in these cases only three hundred grammes of creasotal were required to obtain a perfect cure, and that physicians can obtain from their druggists one ounce of creasotal, at the average price of two shillings, it will appear that the expenditure for the remedy, distributed over several months, is no drawback, and that also the poorest patients can afford to take part in the benefits of the drug.

In the report of Professor von Leyden's clinic, the author concludes by saying: "We think we are entitled to assume a specific action of creasotal. Reviewing our experiences, we come to the opinion that any case of incipient, or not too far advanced, phthisis, may be treated with creasotal with the expectation of a good result. Naturally, a nourishing diet and general good hygiene must go hand in hand with it. And here is the chief advantage of creasotal over creasote, inasmuch as it improves the appetite, and does not irritate the gastro-intestinal canal, it permits us to enforce the proper dietetic treatment of the disease at the same time. Very much the same favorable views in regard to creasotal are expressed in the recently published reports of the university clinics of Vienna and Munich. I believe these experiences prove that Dr. Chaumier's objection to the administration of creasotal in fever is deprived of foundation. As above mentioned, the presence of fever is, perhaps, to be considered as a contraindication for the enormous doses of creasotal which Dr. Chaumier employs, while, on the other hand, the small doses, as recommended by Professor von Leyden, effect the disappearance of the fever."

Creosote (beechwood) is still being experimented with in pulmonary tuberculosis. Many observers, however, have given it up as being of little use, for it is becoming more and more evident that hygienic influences and altitude, whereby pure air is obtained, are more potent elements than any medication. With very few exceptions, observers will acknowledge that unless accompanying hygienic and other treatment is employed, together with the creosote, few recoveries may be expected.

At a meeting of the Harveian Society of London on Thursday, October 21, last, the subject of creosote in consumption was under discussion. Dr. Clifford Beale read a paper on his recent experience in the use of large doses in cases of consumption. He related a series of cases of incipient pulmonary tuberculosis, and also a series of chronic cases, in both of which he noted that creosote must be regarded rather as a useful adjunct to the many already existing methods of hygienic treatment. He employed beechwood creosote dissolved in cod-liver oil, and found that of all the methods of giving this agent, this one appeared to be the least objectionable to the patient himself. Dr. St. Clair Thomson discussed the paper, and although his experience was limited, from what he had heard Dr. Beale state he would conclude that the improvement noted might be due to the rest and good food which the patients obtained in the well-ventilated wards of the hospital. Therefore, before attributing any particular virtue to the creosote, it would be necessary to record the results obtained in an equal number of similar cases treated without creosote, but under exactly the same conditions. Dr. Stamford G. Felce mentioned that he had found varying results from different brands of creosote, and therefore he had abandoned it for guaiacol carbonate.

Mr. C. W. Graham of Carlisle, England, records a case of the tolerance of creosote, as follows: "It may be of interest to record briefly the particulars of a case under my care, in which creosote was exhibited with apparently unique tolerance: A gentleman, aged thirty-five, with a distinct phthisical family history, was attacked twelve months ago with pulmonary tuberculosis. Positive evidence from bacteriological examination of the sputum was from time to time forthcoming during a period of six weeks, when he was acutely ill. In addition to the general principles of treatment, so soon as the diagnosis was established, I prescribed beechwood creosote by the stomach, commencing with *mj* thrice daily, as well as inhalations of guaiacol. The patient, who was possessed of scientific attainments, fully realized the nature of his illness,

and was most anxious from the first to saturate his system with the drug, being imbued with a strong faith in it. The dose was very rapidly increased, till at the end of a month, when I sent him to Arôsa, he was taking exactly three hundred and forty minims in every twenty-four hours. He never had any toxic symptoms. During the two and a half months the patient was at Arôsa he continued to take between three and four fluid drachms each day. He returned, completely restored to health in every detail. Shortly after his return home, the patient's belief in creosote as a prophylactic inspired him to go on taking the drug, and this he has done ever since without any ill effects, the dose varying from one hundred to one hundred and forty minims a day. He continues in perfectly good health.

"In searching records relating to the tolerance of creosote, I have failed to discover any parallel to this case. Advocates of creosote in the treatment of phthisis maintain that the value of it as a specific remedy must be in its exceptional tolerance. It should be noted that the patient inhaled large quantities of guaiacol all the time he was taking creosote by the stomach." (*Brit. Med. Journ.*, Vol. I for 1898, page 144.)

Commenting upon Mr. Graham's case, Mr. Harry Campbell of Wimpole street, London, W. England, writes as follows: "Mr. C. W. Graham, in the *British Medical Journal* of January 15, page 144, refers to a case of his 'in which creosote was exhibited with apparently unique tolerance.' I would point out, that by beginning with small doses and gradually increasing, I have found little difficulty in getting patients to tolerate drachm doses three or four times a day. The best medium for such large doses, as Dr. Clifford Beale has pointed out, is cod-liver oil. If we wish to get the full therapeutic effect of this drug in phthisis, we should not give less than one drachm thrice daily. When this quantity is given, the patient becomes so impregnated with the drug that all his secretions acquire a strong odor of it. This is especially noticeable in the case of the expectoration, showing that the drug is eliminated in large quantities by the very organs we desire to influence by it." (*Brit. Med. Journ.*, Vol. I for 1898, page 299.)

Dr. Charles Lamplough of London, England, has reported 100 cases of pulmonary tuberculosis treated with large doses of beechwood creosote in the City of London Hospital for Diseases of the Chest. He states that large doses are usually prescribed in an emulsion with cod-liver oil and sometimes in a mixture containing alcohol in which creosote is freely soluble. He concludes as follows:

“Having compared the objections raised against the administration of beechwood creosote in phthisis with the results obtained at this hospital by treating 100 cases with this drug, I would suggest that the following points are worthy of consideration and further investigation.

“1. The best beechwood creosote can be given with benefit, in amounts varying from 120 to 240 minims daily in cases of pulmonary tuberculosis.

“2. The drug is best administered in cod-liver oil or in a spirituous solution, and in some cases the ‘creosote chamber’ or oro-nasal inhaler may be ordered in addition, with advantage.

“3. The dose should be small at first, but it can be rapidly increased to 40 minims three times daily for an adult. In 3 cases doses of 30 minims three times a day were well borne by children.

“4. Large doses rarely cause any gastric disturbance; on the contrary, the appetite is frequently increased, symptoms of dyspepsia disappear, and cod-liver oil is more easily assimilated. The cough, expectoration, and night sweats are diminished, and the physical signs improved.

“5. Owing to its disinfectant action in the alimentary canal, the drug probably diminishes the risk of tuberculous enteritis by auto-infection when patients swallow their sputa, but owing to the increased peristalsis, which is created by creosote, it is usually contraindicated in cases where the ulceration is already advanced.

“6. The drug does not tend to cause hæmoptysis, but rather to prevent its recurrence.

“7. Creosote does not irritate the normal mucous membrane of the genito-urinary tract.

“8. Owing to its extremely small cost pure creosote can be given to a much larger number of patients than the carbonates of creosote and guaiacol, which respectively cost four times and twelve times as much as the older drug.” (*Brit Med. Journ.*, Vol. I for 1898, page 1,383.)

Dr. E. Thomas of Geneva, Switzerland, has apparently had some experience in the use of creosote enemata in 5 cases of tuberculous peritonitis. He makes use of an emulsion in cod-liver oil. The ages of the patients were from 7 to 46 years, and they were in a moderately good condition, but either single or double pleuritis existed at the time or had previously existed. All the patients were suffering from anorexia, diarrhoea or constipation, and had some fever. He admits that some of these patients might possibly have recovered without such treatment, but the rapid gain in

weight and general improvement were sufficient proofs to him of the value of creosote in cod-liver oil. At times he would add a few drops of laudanum to insure the retention of the dose. The additional treatment was simply local in every case, consisting in painting with iodoform collodion of 10 per cent. strength. Nothing was given by the mouth.

Creosote valerianate (eosote) is still being used and found to be of service. Dr. W. Zinn reports 80 additional cases treated with this form of creosote since July of 1896, when it was first brought prominently forward. He claims that it is far less disturbing to the alimentary tract than simple creosote is. (*Therap. Monats.*, Vol. 12, page 130.)

Creosote phosphate continues to be used by some observers with good effect. Dr. Boureau of Tours, France, has printed a monograph on the combination of creosote with phosphoric acid which appears to act by adding to the acidity in such a way as to modify the tuberculous condition. (*Nouveau Montpellier Medical*, Vol. XLI, page 840.)

Dr. Brissonnet of Tours, France, addressed the Congress for the Study of Tuberculosis, held in Paris from July 27 to August 1, last, on some new preparations of creosote which he claims had less odor and taste and were better tolerated than the beechwood creosote. He alluded to creosote phosphate, creosote tanno-phosphate and a combination of formaldehyde with creosote under the name of "cresoform," which he described as being a greenish powder.

There has recently been offered a phosphite of creosote under the name of "phosphotal," which appears as a thick liquid with an odor resembling creosote. Clinical reports are still awaited.

The following formula has been recommended for the administration of creosote in pill form:

Creosote	0.10 grammes (about 1½ grains)
Powd. liquorice root	0.20 " (" 3 ")
Water	0.05 " (" 4-5 ")

Dr. W. Hesse of Dresden, Prussia, has carried on a series of interesting experiments to determine the poisonous action of creosote and guaiacol in comparison with the carbonates of these agents. His experiments were six in number and made upon dogs, and his conclusions were that whereas creosote and guaiacol in large doses were found to be poisonous and produced death by their corrosive action, the carbonates of these agents in smaller

doses produced little effect upon the system of the animals. (*Deut. Medicin. Wöchensch. Therap. Beilage*, Vol. XXIV, page 11.)

Dermatol (bismuth subgallate) is so well established in the medical profession that there is little need for practitioners to mention it specially in the medical journals, therefore little has appeared under that head throughout the year.

Dextroform, the combination of dextrin and formaldehyde and closely allied in composition and therapeutic effects to amyloform (starch and formaldehyde), has been little mentioned in the current medical literature of the year. Dr. Niessen, however, mentions it somewhat incidentally as a part of his "Experiments with some New Substitutes for Silver Nitrate in the Treatment of Gonorrhœa" (*Muench. Medicin. Wochensch.*, Vol. XLV, page 359), and states that after employing it in a limited number of cases, it proved of sufficient value to warrant its recommendation.

Diaphtherin (oxy-chin-aseptol), the antiseptic and astringent, was not all used up during the past year, for there was still enough on hand for Dr. F. Mays to experiment with. He now details his experience in its therapeutic applications, although he admits that it is a substance that is no longer manufactured commercially.

"He reports a number of cases in which solutions of diaphtherin were effective in healing suppurative wounds, and particularly suppurating inflammations of the mucous membranes. One patient, suffering from gonorrhœal endometritis, was cured in about 4 days. A second, a man, suffering from cystitis of 6 years' duration, was treated with daily irrigations of 0.5 per cent. solution, with immediate improvement and ultimate permanent cure. A third patient suffered from endometritis and mania. The former condition was cured after 5 injections of a 0.5 per cent. solution. A fourth patient suffered from otorrhœa, and the fifth was Mays himself, who suffered from a similar condition; both were cured by washing with a 0.5 per cent. solution. In addition 2 cases are reported in which the patients suffered from crushes of the fingers, and the terminal phalanx was saved by putting on a wet dressing of diaphtherin. Both wounds were exceedingly dirty when treatment was instituted. The only objection to the substance is that it has a tendency to make the hands and instruments black." (*Muench. Medicin. Wochensch.*, Vol. XLV, page 782.)

Diuretin (sodio-theobromine salicylate) is still prominently before the medical profession throughout the two continents, but little new appears in the medical literature under this head. How-

ever, Dr. Dreschfeld read a paper on diuretin at the fifth meeting for the session of 1897-'98 of the Manchester (England) Therapeutical society on May 25th, last :

“After referring to the experimental results and clinical experiences of this drug, recorded by some continental observers, Dr. Dreschfeld stated that he had employed diuretin in many cases during the past eight years and he considered it a valuable remedial agent. He had found it act well in acute Bright’s disease, especially in cases in which the urine was scanty. He had frequently seen the urine increase in amount from 12 or 15 to 80 or 100 oz. in the twenty-four hours. In post-scarlatinal nephritis the drug did not seem to give such good results. In chronic parenchymatous nephritis he had found it act when digitalis and other drugs had not succeeded, but the effects were only temporary. There was no definite reduction of the amount of albumin. On the other hand, there was no evidence of irritating action. In interstitial nephritis the results had been disappointing and in these cases toxic effects were more liable to occur. As regards its use in heart disease Dr. Dreschfeld had found diuretin of great value in cases of mitral disease, especially when the dropsical symptoms had come on suddenly. In aortic disease the results had not been so satisfactory ; there was no relief to the anginal symptoms, no great diuresis, and the drug was not always well borne. In simple dilatation, without valvular lesion, where digitalis had failed diuretin had sometimes succeeded. In cirrhosis of the liver the effects of diuretin were sometimes startling. He had seen diuresis amounting to four or five quarts of urine in the twenty-four hours. The cases which seemed to respond best to diuretin were those in which dropsy had developed suddenly. In older people with ascites coming on gradually diuretin had failed. In two cases of pleuritic effusion Dr. Dreschfeld had observed rapid recovery under the use of diuretin, but in other cases no marked effect was observed. In cases of peritonitis no relief had been obtained ; he had not tried the drug in pericarditis and did not think it likely to be of much use. Dr. Dreschfeld considered diuretin to be a useful and powerful diuretic, acting probably on the epithelium of the convoluted tubules of the kidney. He gives it in from 10 to 12 gr. doses three times a day at first, increasing to 30 gr. doses if necessary. As regards its ill effects, sometimes diuretin is not well borne, producing nausea, vomiting, and occasionally signs of collapse. Often when diuretin alone does not answer it succeeds on combining it with digitalis.”

In the discussion which followed, the secretary of the society on behalf of Dr. Steell, showed a series of charts illustrating the diuretic effects of diuretin in cases of aortic disease, mitral disease, functional heart disease, cirrhosis of the liver, and pleurisy. One of the charts showed a marked diuretic effect obtained three times in succession in the same patient. Dr. Steell gives diuretin in 2 gr. doses every hour, day and night. In two cases of Bright's disease he had observed hæmaturia following the use of diuretin and had not employed the drug in such cases since.

Dr. J. Dixon Mann, the president of the society, had observed similar results to those described by Dr. Dreschfeld, but he had obtained no good effects in cases of large white kidney. In heart cases he had found diuretin very useful. In cirrhosis of the liver he had observed little result, perhaps because the cases were of more gradual onset. He had found theobromine alone very useful and suggested that theobromine in some soluble form might be more advantageous than diuretin, which was sometimes depressing owing to the salicylate of sodium which it contained. (*London Lancet*, Vol. 1 for 1898, page 1,621,

Eka-iodoform, said to be a mixture of paraform and iodoform and offered as a new substitute for iodoform last year, has not been heard of throughout the year past in the current medical literature.

Ergot of the proper quality is unfortunately becoming more difficult to obtain each year. There is undoubtedly much of this article to be found in the market each season but its therapeutic efficiency is quite deficient. Poor seasons for its proper development are becoming more frequent as the demand increases to supply the growing wants, and where one or more poor seasons succeed each other the lack of a good quality becomes more embarrassing. Therefore it is not surprising that increased efforts are being made toward its preservation from one season to another. In France the preservation has been attempted by Mons. L. Aymonier, by immersing the fresh ergot in an ethereal tincture of tulu, permitting it to dry and then preserving it in well-sealed packages. The ergot thus thoroughly varnished with the coating of tulu has been preserved, according to records, for eight months without any visible change, and the statement is made that it would no doubt keep for an indefinite period. The English claim that this practice has been known by them for many years. They claim that the ergot so treated has a slight taste, which is quite natural, but it otherwise leaves the ergot unaffected. It is recom-

mended, however, that the fluid preparation should be made of the fresh ergot at once and thus insure its keeping. Mr. John Moss of Galen Works, London, S. E., England, writes a note (*Chem. and Drug.*, Vol. LII, page 220) stating :

“Before the British pharmaceutical conference at Aberdeen, in 1885, I read a note describing an experiment which was carried out originally at the suggestion of that veteran pharmacist, T. B. Groves. Ergot was crushed to a coarse powder, then put into a hydraulic press, and as much as possible of the oil squeezed out. The cake that was left resembled a piece of linseed cake—as hard and dry as a board is. It was wrapped in paper in the ordinary way, and left on a shelf for seven years. No weevil got his tooth into it, and some liquid extract prepared therefrom was employed in several cases and found to be as effective as the same preparation from fresh sound ergot. The plan described was not so fortunate as to secure the approval and support of Professor Kobert, whose authority on ergot is so justly worthy of respect. Why, I don’t know ; but I hold, nevertheless, that an affirmative experiment of this nature is more valuable than any number of failures, as showing that ergot can be preserved under very ordinary conditions if pressed into a cake and the oil squeezed out.”

On this side of the Atlantic a still better practice is carried out and that is to sprinkle chloroform liberally through a large package of either the whole ergot or the ground ergot and properly seal the package. By such a device it is preserved practically indefinitely, for there is little chance for the peculiar insect to live in that atmosphere.

Ethyl bromide (hydrobromic ether) is still being urged by many who have not had sufficiently disappointing results to make them inclined to give it up in favor of the safer anæsthetics. However, little has been written definitely upon its use. The most prominent article in the current medical literature throughout the year is that of Dr. Frank C. Hammond on “Anæsthesia and anæsthetics, with a plea for the more general employment of chloroform and ethyl bromide.” (*Ther. Gaz.*, Vol. XXII, page 511.) He concludes by making an earnest plea for its more general employment, “owing to the very limited time required to produce its effects, the post anæsthetic symptoms are practically *nil*, the patient reacts very readily, and is able to resume routine duties within a short time after consciousness is restored. Above all, self confidence is needed ; keep a cool, clear head, and be prepared to meet any emergencies that may arise.”

Ethyl Chloride (muriatic ether) continues to receive a moderate amount of attention and some observers have made reports of their experience. Its purity has been more nearly perfected, and therefore it has a better chance to be considered favorably.

Dr. Josef Pircher of Innsbruck, Austria, has written an article on "Ethyl-Chloride Narcosis" (*Wien. klin. Wochensch.*, Vol. LXI, page 511). He states he had had 141 cases of general anæsthesia with this agent including general surgical operations, osteoclasis for club-foot, in the reduction and dressing of fractures, in the reduction of various luxations and in the many operations which have required the use of the Paquelin cautery. He claims the chief advantages to be the very rapid production of anæsthesia with loss of consciousness at once, and on the other hand the rapid return of consciousness upon withdrawing the anæsthetic. The short period of excitation is also a point of advantage which he constantly observed. He argues that the psychic center is first affected and the reflex center later. Throughout his 141 cases he observed no dangerous symptoms from its administration. He would only recommend this anæsthetic in place of chloroform when the patient's age and the condition of his lungs, kidneys, and other organs would seem to contraindicate the use of chloroform. He found it quite impossible to prolong the narcosis indefinitely, and the longest time which he kept any of his 141 cases under its influence was twenty-five minutes.

Drs. Pictet and Bengué of Paris have each offered to the profession what is claimed to be a strictly chemically pure product. They each have their special little apparatus, the former consisting of a vessel which is made to stand upright, on the shoulder of which is a screw valve connected with a bent glass tube which dips to the bottom of the liquid when the vessel is in the upright position. When a spray is desired the valve is simply removed and a jet of liquid is forced out by the pressure of the vapor within. When the vessel is turned upside down the flow of the liquid soon ceases for the end of the tube within then projects above the level of the liquid. The curve in the glass tube within is useful also in preventing the capillary opening from getting choked up. Dr. Bengué's little tube is of a mole-like shape with a drawn out snout, and a file mark on the prolonged end to be cut off when the spray is to be used.

Eucaine (benzoyl-vinyl-di-aceton-alkamin) has apparently gone through the experimental stage of all new and effective agents and now is settling back into its proper sphere of usefulness. Some

observers have even gone so far as to look with disfavor upon it, but as far as can be observed such disfavor is no more serious than a similar disposition which was shown in regard to cocaine when it was going through its parallel stage. It is probably in dental surgery that its largest use is seen. Dr. A. Legrand makes use of a 2 per cent. solution which has been sterilized by boiling. This apparently is a stable solution which he finds to be free from danger and allows him to proceed with his extractions at once, and the patient is allowed to rise and leave his office immediately after the operation. With cocaine, however, although a 1 per cent. solution is effective, the dentists evidently have to observe the precaution of keeping the patient in a horizontal position for an hour or so after the operation has been completed, in order to avoid vertigo, the tendency towards syncope and peculiar pains in the stomach. Other observers make use of a 1 per cent. solution of this agent but that strength appears to require a delay of at least five minutes before an extraction can be begun.

Dr. Paul Reclus reports having used "eucaine- β " for over six months and expresses great satisfaction in that stable solutions may be obtained by boiling, whereas with cocaine ecgonine is formed after boiling which he finds is deficient in analgesic effects. He finds eucaine to be less toxic than cocaine and its anæsthetic effect weaker. He prefers a 2 per cent. solution for injecting into the tissues. It appears to cause local vaso-dilatation and thus hæmorrhage is apt to occur. He finally concludes that cocaine, when carefully employed, is to be preferred." (*Bulletin de l' Acad. de Méd.*, Vol. XXXIX, page 359.)

In regard to the keeping qualities of a solution of eucaine it is reported that the dentists find that the best strength for general use is about 1 to 19 and that a 9 per cent. solution is about the strongest that will remain permanent. If it is attempted to keep a stronger solution the eucaine apparently separates out. Dr. Legrand finds that when using it on inflamed tissues the results are just about as uncertain as from cocaine, and upon mucous surfaces and in wounds a disagreeable burning sensation is experienced which is usually felt about twenty-five minutes after complete anæsthesia is accomplished, and which may last as long as an hour and a half.

"Zaloga (Khirurgya, February, 1898) considers eucaine a more valuable local anæsthetic in dental surgery than cocaine. In the course of six months he made use of cocaine in 220 cases of tooth extraction while eucaine was used in 320 cases for the same pur-

pose. In each case the hydrochlorate of the alkaloid was used, and about one c. cm. of solution was injected deeply into the gum in two places on each side of the tooth. A 2 per cent. solution of hydrochlorate of cocaine was sufficient to produce local anæsthesia; but a 5 per cent. solution of eucaine hydrochlorate was necessary to get the same result. The doses of the two alkaloids were therefore 0.02 and 0.05 g. respectively. Toxic effects were observed in 46 per cent. of cases where cocaine was used. The symptoms of poisoning ranged from a slight giddiness to faintness, cold perspiration, dilated pupils, sickness, and irregular respiration. None of these symptoms followed the use of eucaine. The only drawback in the use of the latter alkaloid is the subsequent appearance of a painless swelling over the seat of injection. This peculiar effect was not due to any septicity of the solution, as the latter was carefully tested bacteriologically, and found free from germs." (Epitome of *Brit. Med. Journ.*, Vol. I for 1898, page 48.)

From France we hear that Dr. Martin has employed a solution of the hydrochlorate in a comparative way alongside of the cocaine salt in affections of the larynx, nose, and ears and apparently with favor to the former. He finds that it does not cause retraction of the nasal mucous membrane and although a slight smarting sensation is noticed when applied to the nose and larynx, it is much better borne than cocaine. (*Bulletin Gén. de Thérap.*, Vol. CXXXIV, page 574.)

Dr. W. Jobson Horne and Macleod Yearsley of Farrington, London, England, have continued their previous investigations in the use of this agent as a local anæsthetic in surgery of the throat, nose, and ear and now make a more complete report to follow their preliminary communication of last year. Their communication is quite complete and well worth consideration by those who are interested in this agent. They conclude as follows by a consideration of the after effects :

"As regards the disturbances of sensation following the anæsthetic action of the drug, more particularly in the case of the pharynx, these are not only less unpleasant and less marked than those produced by cocaine, but more transient, and, speaking generally, after the lapse of an hour from the time of application, the subjective sensations may be described as normal. Those who have experienced the effects of both drugs have expressed a decided preference for eucaine.

"Passing to a comparison of the toxic potentiality of the two drugs; we are able to supplement those cases in our preliminary

paper, in which operations had to be abandoned on account of an idiosyncrasy for cocaine, but had been practical under eucaine, by quoting a case which came under our notice in a medical man:

"A 10 per cent. solution of cocaine was applied to the right naris for a galvano-cautery operation. In two minutes the patient was much excited, gesticulating and talking loud and fast; three minutes later this gave place to great depression; the pulse became weak, slow, and slightly irregular, and there was a feeling of oppression in the cardiac region. He gradually recovered on lying down, but complained of tingling and numbness in the calves of the legs, and a feeling of great weakness in the back which lasted the remainder of the day.

"Four months later an 8 per cent. solution of eucaine was used for a similar purpose. The pulse remained the same in rate and character throughout. Anæsthesia was sufficient for the galvano-cautery. The only after-effect noted was 'a hot taste' at the right side of the pharynx lasting fifteen minutes.

"Were eucaine to be of no further service than to act as an efficient substitute in cases such as we have mentioned in which an idiosyncrasy for cocaine precluded an operation, even then this new local anæsthetic could not be regarded otherwise than of importance.

"So far in our experience with eucaine we have not met with a case in which a single symptom supervened in the least way suggestive of a toxic effect of the drug." (*Brit. Med. Journ.*, Vol. II for 1897, page 1560.)

Dr. Louis S. Somers of Philadelphia, Pa., reports (*Therap. Gaz.*, Vol. XXII, page 587) on his use of the hydrochlorate "B" as a local anæsthetic in the nose, and closes as follows:

"From a study of the results obtained by the use of eucaine 'B,' the following conclusions as to its value compared with cocaine and the former eucaine may be deduced:

"1. Eucaine hydrochlorate 'B' in 3 per cent. solution produces as complete anæsthesia of the nasal mucous membrane as does a 4 per cent. solution of cocaine.

"2. Its action is slower than the latter drug.

"3. The anæsthesia is dissipated more rapidly than that produced by cocaine.

"4. It is non-toxic in the strength and manner here used.

"5. As it has no apparent shrinking action on the turbinal investiture as has cocaine, it is therefore less valuable for nasal surgery than the last mentioned drug.

"6. It is superior to the former variety of eucaine because its toxic properties are less, it is more rapid in action, is non-irritating, and the same degree of anæsthesia may be produced by smaller amounts of the drug."

In general surgery it is being used to an increasing extent to avoid general anæsthesia, for many reasons, especially in those patients suffering from cardiac affections. Dr. Giuseppe Cipriani claims that the "eucaine B" does not irritate the mucous membrane nor does it produce a hyperæmia which is at all inconvenient. He employs a strength of solution much greater than those mentioned above, as it varies from 2 to 6 per cent. With such increased strengths he gets very successful results in short operations.

Apparently the most critical test it has yet had was in its use in an amputation of the lower third of the leg of a sixty-eight year old man upon whom neither chloroform nor ether was used. The stump healed rapidly and without pain. The plan adopted was to dissolve as much eucaine as two or three tablespoonfuls of distilled water would take up, and then make use of this solution by injecting a few drops hypodermically under the skin. Injections about one inch apart were made completely round the limb, and after a delay of five minutes in order to permit the anæsthesia to be complete, the hypodermic needle was thrust more deeply into the muscular tissue and an injection made which resulted in producing complete anæsthesia in the immediate region of the amputation, and for three or four inches above and below. The operation was then undertaken promptly just as if chloroform had been administered. As the deeper tissues were reached a slight smarting sensation was noted which was relieved by a little more of the solution applied to the sensitive part.

Dr. Dwight S. Moore of Jamestown, N. D., has reported "A Case of Progressive Disease of the Bones of the Foot, Ankle, and Leg," in which he amputated at the middle third of the limb under the local anæsthetic influence of eucaine hydrochlorate (*Jour. Amer. Med. Asso.*, Vol. XXX, page 1028). He concludes as follows:

"This operation shows conclusively that in those cases where previously existing pathologic conditions or other causes render the administration of a general anæsthetic dangerous or inadvisable, the use of eucaine will enable us to perform a painless operation, free from all the dangers and annoyances attending the use of chloroform or either during their administration, the performance of the operation, or the emergence from the anæsthetic condition."

Eucasin, the new food compound, similar to nutrose, and produced by passing ammonia gas over casein obtained from milk, is still before the medical profession although this time last year little could be said upon it as having appeared in the literature.

Drs. A. Baginsky and Sommerfield have taken pains to report their study of this agent as a substitute for meat in the diet of two children with normal digestion. They took care that the diet of each was identical. The first was fed for four days on a mixed diet. Each portion of the food was carefully weighed and the elementary parts estimated. The four days following this, exactly the same allowance was made except that the meat of the previous diet was replaced by about two sevenths of its weight of eucasin. Then for a third series of four days the original mixed diet was renewed. Careful figures were taken of the body weight, the amount and analysis of the urine and feces, the quantity of nitrogen used, wasted, and excreted and the amount of fat taken in and excreted. The results proved that the use of eucasin led to no digestive disturbance. It, however, increased the excretion of nitrogen and very decidedly diminished the excretion of uric acid. It was therefore concluded that the child made good use of the eucasin, at least as much as the meat and egg albumen, and thus the use of this agent could well replace such articles of food. These results no doubt will be interesting to those who have not known of such results when given to children.

Dr. Hugo Weiss of Vienna, Austria, has now published (*Wien. klin. Wochensch.*, Vol. X, page 1140) his observations with the use of this agent in seventy-nine cases. He found on first working with this agent that its disagreeable flavor of rotten cheese was so unpalatable that it retarded his progress in using it, but this objection has now been overcome by the manufacturers so that it is offered in such a form that it may be made up into palatable cakes, thick soups, and chocolate. He finds its peculiar advantages three in number. First, it contains 95.65 per cent. of proteids, whereas beef only contains 20.63 per cent. Second, these proteids are in the most digestible form and give little fermentative change in the alimentary tract. He thus approves of the use of this agent in preference to the well-known meat extracts which he has noticed produce a marked indigestion after a time. Third, it is much cheaper than all similar preparations. His observations showed a noticeable increase in the weight of his healthy subjects experimented upon, without any digestive disturbances within three or four weeks. On the other hand with forty of his patients

who were affected with pulmonary and laryngeal tuberculosis a marked increase of flesh was observed when they were fed upon three or four tablespoonfuls of eucasin, two to four eggs, a pint and a half of milk and some fat each day. His most marked results were obtained in two cases which gained fifteen and ten pounds respectively in fourteen weeks. He considers this agent of marked value in all chronic cases of pulmonary tuberculosis where there is loss of appetite, and in acute affections of the apices of the lungs. In stomach troubles he finds it particularly efficient on account of its small bulk and ready absorbability. He has made good use of it in gastric ulcers, atony of the stomach, and hyperemesis gravidarum; in chronic intestinal catarrh with constipation, particularly in fat anæmic women with uric acid diathesis, it is of marked value and he has proved its efficiency in eight cases of anæmia and chlorosis. He finds that the excretion of uric acid is diminished in leukæmia when using this agent. He proposes to extend his somewhat limited use of it in diabetes, rheumatism, malignant disease, and nephritis for more conclusive results.

Euchinin (euquinine), the compound of quinine introduced last year, has continued to be used, especially abroad. It has been employed in various forms of fever, neuralgia, pertussis, and as a tonic in anæmia and chlorosis, but little enthusiasm is manifested in its use when compared with the older standbys. In the hospitals of Milan, Italy, it appears to have been used on quite a large scale, fourteen cases being reported. About the same action is attributed to it as to quinine or cinchona bark. Most observers report that the peculiar physiological action of quinine called cinchonism does not take place with this agent. One marked advantage of this agent is that it is quite tasteless when first placed on the tongue, but a very slight bitter taste becomes evident after remaining there some little time. This is quite a recommendation for it, especially when it is to be administered to children, as it can be given either in the granular form with water, or in milk, which appears to be a favorite way of administering it.

A paper on "Euchinin in Malaria," by St. Geo. Gray of St. Lucia, West Indies, appears in the *British Medical Journal* (Vol. I for 1898, page 551) which is interesting in this connection. He writes:

"Since last August I have been observing the effect of euchinin on malarial fevers, and, as far as my experience goes, I find it highly satisfactory in suitable cases.

"Up to now I have only employed it in undoubted cases of mala-

ria, where I find it superior to quinine in being tasteless and requiring a smaller dose to reduce the temperature. However, I must differ *in toto* from the statement reproduced in the *British Medical Journal* of Dec. 11, 1897, that euchinin does not cause cinchonism, for I have seen it cause tinnitus, aurium, deafness, and derangement of vision and sensation in a more marked degree than the same dose of quinine.

"Contrary to the statement of Professor von Noorden, that fifteen grains of quinine are equal to twenty-five or thirty grains of euchinin, I find that euchinin is a more powerful antipyretic than quinine, and that, in malarial fevers at least, ten to fifteen grains of euchinin are as efficacious as twenty to twenty-five or thirty grains of quinine sulphate, and that it nearly always, in doses of twelve to fifteen grains, causes buzzing in the ears if not other symptoms of cinchonism.

"The largest dose I have given has been fifteen grains once or twice a day, always commencing with a good purge, which I consider essential in the treatment of all malarial fevers. This is sufficient in most cases, following the treatment with tonics and change of air if possible after the temperature has remained normal for a few days. I append notes of a few cases."

Here follows a clinical record of five cases, after which he concludes as follows:

"I have used euchinin in many other cases, but they are all similar to the above. To sum up:

"1. Euchinin is as effective as quinine in malarial fever.

"2. It causes cinchonism.

"3. It is tasteless, therefore easily administered. This is its great advantage over quinine.

"The readiest form of administering euchinin is the simple powder placed dry on the tongue and washed down by a little water. As it is very bulky, some patients prefer it in cachets; but all solutions of euchinin that I have seen are decidedly bitter, presenting no advantage whatever over quinine.

"I do not consider cinchonism such a fatal objection as the intensely bitter taste of quinine. My experience of malarial fevers is that quinine and the malarial poison being antidotes to one another, cinchonism is the sign that a sufficient quantity of quinine has been taken to overcome its antagonist, the malarial poison, as mercurialism is the sign that the syphilitic poison is under control.

"If euchinin can be proved to be even nearly as effectual as

quinine, its tastelessness alone should recommend it to many as a substitute, notwithstanding that it is not altogether free from some of the other objections to quinine."

Eudoxin (bismuth salt of nosophen) is still claimed by not a few to be the best of the bismuth salts as a gastro-intestinal disinfectant. It has been particularly effective and pleasing in its action, most generally in infantile diarrhœa, as reported from this country and abroad. One report from this country will illustrate, that of Dr. M. Elezarian, of New York city, which will be found in the *N. Y. Med. Journ.* (Vol. LXVIII, page 270), in which he concludes as follows:

"Altogether, I have used up to the present writing eudoxin in fifteen cases of diarrhœa, cases mostly in children, and the antiseptic effects of it in such cases have been marvelous. Preference should be given to eudoxin rather than bismuth subnitrate or carbonate, because we all know how poisonous bismuth is in large doses on the gastro-intestinal mucous membrane, and very frequently we are afraid to give full doses of bismuth to children for this reason only. Although we have other intestinal antiseptics, such as salol and salicylates, etc., there is reason for caution in administering any of these drugs on account of their toxic effects. I found eudoxin very harmless and giving no cause for any alarm. I have given as much as a grain every hour to a child a year old without any alarming results.

"My impression is, from inquiring among my colleagues about eudoxin, that sometimes too small a dose is administered in certain cases, and therefore the result is disappointing to them, and they are apt to get easily discouraged, as we quite frequently do with any new drug before we are thoroughly convinced that we have given it a thorough, scientific, and unhesitating trial. The proper and effective dose will be understood and appreciated only after careful study of each individual idiosyncrasy and the disease."

Euphthalmin is the hydrochlorate of a mandelic acid derivative of γ -methyl-vinyl-di-aceton-alkamin, which bears the same relation to eucaine that homatropin does to tropacocaine. It is offered as a new mydriatic. It has been used with some effect as a substitute for both atropin and homatropin in ophthalmological practice. As closely as it resembles "eucaine B" in its composition, it has no antiseptic properties. Dr. B. Treutler, of Marburg, Prussia, has been one of the prominent observers who have reported. He draws the following conclusions:

"1. The instillation of euphthalmin solutions into the eye causes only very slight and temporary inconvenience.

"2. Euphthalmin is a powerful mydriatic. A five to ten per cent. solution produces the maximum expansion of the pupil in about the same time as a one per cent. homatropin solution.

"3. The mydriatic action is less intense and prompt with adults than with young people.

"4. As a mydriatic euphthalmin has the advantages over cocaine that it is more powerful in action and does not damage the corneal epithelium; on the other hand, mydriasis is slower in development.

"5. Euphthalmin affects the accommodation less than homatropin does.

"6. The disappearance both of mydriasis and of the paresis of the accommodation takes place much more quickly than after the employment of homatropin.

"7. No unpleasant effects upon the organism have thus far been observed." (*Klinisch. Monatsbl. für Augenheilk*, Vol. XXXV, page 285.)

Dr. Winselmann, of Berlin, Germany, reports that he finds this agent of much value for diagnostic purposes. When using a five per cent. solution initial mydriasis is produced in twenty minutes, the maximum effect in thirty-two minutes. When a ten per cent. solution is used, fourteen and twenty-three minutes elapse respectively. Slight pupillary reaction to light persists from five to fourteen minutes later. There appears to be either no impairment of accommodation or only very slight, and reading does not appear to be interfered with. The maximum mydriasis extends from three to three and one half hours, and the normal size of the pupil is resumed in about seven hours. Neither conjunctival nor corneal irritation, pain, nor tension is observed. (*Klinisch. Monatsbl. für Augenheilk*, Vol. XXXVI, page 253.)

Euophen (iso-butyl-ortho-cresol iodide), the iodoform substitute, containing 27.6 per cent. of iodine, has received about as much attention during the past year as the year previous. Some surgeons seem to favor it very partially, and others again find little advantage in it over the other well-known agents. In fissures of the anus the following formula has been used with good effect:

Euophen	195 milligrammes (3 grains)
Cacao butter	4 grammes (about 60 " "

made up into a suppository and introduced into the rectum every night and morning after the use of an enema. It is recommended also to sprinkle the anus with equal parts of this agent and salol.

In wounds of various kinds, the following formula has been used :

· Europhen	· · · · ·	1 part
Castor oil	· · · · ·	1 “
Collodion	· · · · ·	10 parts

In an article by Dr. J. Abbott Cantrell on, “Scalds and Burns” (*Ther. Gaz.*, Vol. XXII, page 622), among other agents he mentions the use of europhen in a very subordinate way.

At a meeting of the Philadelphia County Medical Society on December 8th, last, Dr. Lawrence F. Flick read a paper on the “Treatment of Tuberculosis with Inunctions of Europhen,” and exhibited some patients. The patients had previously been under the ordinary treatment, including creosote, but it was not until the inunctions of europhen had been commenced that any improvement was noticed. This latter had been progressive and was most marked. At the same time the patients were taking creosote in doses approximating forty drops three times a day, but as they had been taking this previously the good effects of the treatment were naturally ascribed to the europhen. Dr. M. B. Hartzell pointed out the inefficacy of europhen and other iodine preparations in diseases of the skin, and doubted inferentially the wisdom of administering such preparations in pulmonary tuberculosis. Drs. Henry Beates, L. J. Hammond, and H. A. Hare also took part in the discussion, the latter remarking that if this treatment is to be employed the cases should be carefully selected. Dr. Flick maintained that the good effects of the treatment were to be accorded to the europhen, which he had latterly employed, instead of iodoform because of its less offensive odor. He had long been convinced that iodine is the best remedy for the treatment of tuberculosis, and of the preparations of iodine europhen is the most desirable. It is especially to be employed in the incipency of the disorder, creosote being always indicated in the latter stages. The president, Dr. James Tyson, thought that the treatment commended itself for trial in view of the great importance of the subject.” (*Phila. Med. Journ.*, Vol. 1, page 11.)

Dr. Edward O. Otis of Boston, Mass., has published an article on “Some Modern Methods of the Treatment of Phthisis, and its Symptoms,” as read before the Massachusetts Medical Society on

June 8th, last (*Boston Med. and Surg. Journ.*, Vol. CXXXIX, pages 31 and 55), in which he mentions Dr. Flick's formula for an inunction as follows:

Euophen	4 grammes (60 grains)
Oil of anise	4 " (60 ")
Olive oil	75 " (2½ ounces)
Oil of rose	1 drop

Exalgin (methyl-acetanilid), the analgesic, still continues to be used but receives little mention in the medical literature in a special way. From Canada we hear through Dr. F. C. Caley of Newcastle of the remarkable relief obtained in severe dental neuralgia when 130 milligrammes (two grains) in an alcoholic solution of this agent is used. A single dose gives prompt relief in a few minutes, which appears to be lasting. He reports that 3.7 Cc. (60 minims) of alcohol will hold in solution 1.9 grammes (30 grains) of exalgin even though a small quantity of water be added. On rare occasions an erythematous eruption occurs after the administration of this agent. Dr. G. Linossier of France reports noting a patient who previously could not take antipyrin on account of such a rash, and having been given 260 milligrammes (4 grains) of exalgin for the relief of headache exhibited a general erythema an hour after the dose was taken. The next day the body was found to be covered with round, bright red papular areas of quite a considerable size. The back of the hands and the digital interspaces showed ecchymotic elevations. The epidermis afterwards separated and colorless liquid appeared in numerous bullæ. Extreme pain was felt when these papular areas were pressed upon, but no very marked itching was noticed. When these bullæ disappeared the site of each was the seat of extreme pain. The whole of the alimentary tract was affected, for a very decided burning pain apparently extended throughout its whole length. The gums were also affected with erythematous patches. In the course of three or four days all the above manifestations disappeared. (*Bulletin Général de Thérapeutique*, Vol. CXXXV, page 492.)

Dr. E. A. Lermite of Stamford Hill, London, N. England, reports a case of "An Overdose of Exalgin" (*Brit. Med. Journ.*, Vol. I for 1898, page 1518) as follows:

"Last month I was attending Mrs. H. for severe facial neuralgia caused by several carious teeth. On April 28th, I administered chloroform whilst the teeth were extracted. After the extraction

the patient became very hysterical, and I gave a hypodermic injection of morphine and hyoscine. Later in the evening, on completely regaining consciousness, she complained that the pain in her face and head was as great as ever. Knowing by previous experience that the case was not amenable to treatment by bromides, quinine, or butyl-chloral-hydras, I ordered a mixture containing 2 grains of exalgin in 2 drachms, and ordered this dose to be taken every four hours. That night she took one dose, and the next morning at 8:20 a. m. a friend administered two tablespoonsful of the mixture instead of two teaspoonsful. Thus she took 8 grains of exalgin as a single dose. Very shortly afterwards she exclaimed: 'I am dying, send for the doctor.' I arrived half an hour later, and found the patient sensible, although somewhat dazed. The pulse was 84, full, strong, and regular. The breathing was regular, and there was no dyspnoea. No symptoms of collapse were present.

"I then received the following account from the patient:

"'Shortly after taking the dose of medicine I noticed pain in the stomach and felt very faint, but not giddy. I also noticed that the pain in my head left me quite suddenly. I then lost my sight and felt paralyzed, although still quite conscious and able to hear and understand all that was said in the room.' These symptoms disappeared gradually in about twenty minutes. With the exception of slight faintness about 9:45 a. m. the patient had no other unpleasant symptom. Later in the day the neuralgic pains recurred, though in a modified degree.

"I consider the case one of interest, as I cannot find any report of so large a dose having been taken, whereas cases have been reported in which a dose of $1\frac{1}{4}$ grain has given rise to vertigo and faintness, and in one case it caused an epileptiform fit. The mildness of the symptoms and the rapid recovery are also remarkable."

For the sake of completeness and interest to those who care to read further on the subject, it may be interesting to state here that Dr. A. Lockhart Gillespie of Edinburgh, Scotland, wrote to the *British Medical Journal* (Vol. I for 1898, page 1692) in relation to the above case as follows:

"Dr. Lermite will find notes of a case in which the patient took 36 grains of exalgin between 2 and 11 p. m., in the *Edinburgh Medical Journal* for May, 1892, p. 1054, and a fuller account of the symptoms produced in the *Medical Press and Circular*, April, 1892."

Ferratin (acid albuminate of iron) is apparently still in use by many observers on the other side of the Atlantic, but either there are comparatively few who are making use of it in this country, or else the reports fail to appear in the current literature. Those reports which have been made are either old reports repeated, or are made in such a way as not to be very convincing. As we might readily infer, anæmia and chlorosis are the two affections in which it has been most largely used. The formula recommended is:

Ferratin	15 grammes (231½ grains)
Sodium bicarb.	9 “ (139 “)
Refined sugar	15 “ (231½ “)

This is made up into thirty powders, and one is given to an adult in a glass of sweetened water three times a day.

Ferripyrin (ferropyrin), the hemostatic compound consisting of 64 per cent. antipyrin, 24 per cent. chlorine, and 12 per cent. iron, has been practically unnoticed throughout the past year.

Filmogen (pyroxylin dissolved in acetone, and a small portion of castor oil added) has not been heard of in the literature of the past year. When first alluded to here, it gave promise of being a very satisfactory collodion, and it is difficult to understand why it has not taken a place among the requisites of a surgeon.

Fluoral (sodium fluoride), recommended as a superior antiseptic, has been practically unheard of anywhere in the current literature of the past year.

Formalin (40 per cent. solution of formaldehyde), the now well-known antiseptic, disinfectant, deodorizer and germicide, has increased so much in importance and value that practically every medical practitioner knows about it from personal use. It is natural, therefore, to expect that the literature would become very voluminous, and in a comment, here, only a small part of the allusions can be even referred to. One of the most interesting and thorough studies of the disinfection of dwelling-rooms with formaldehyde vapor was undertaken by Dr. A. W. Fairbanks of Boston, Mass., in a series of experiments in the city hospital at Charlottenburg, Germany, which will go to prove that this form of general disinfection will soon largely, if not completely, supersede the older methods. (*Centralbl. für Bakteriöl., Parasitenk. und Infektionskr.*, Vol. XXIII, pages 20, 80, 138.)

According to some observers, the usual method adopted for disinfection with formaldehyde vapor, requires such a large propor-

tion of steam for its effective working that its activity is lessened. Therefore, it has been suggested that 10 per cent. of glycerin be added to formalin to overcome that difficulty, and that if this combination be sprayed from a suitable apparatus, much more satisfactory results will be obtained. Such a combination has now been offered under the name of "glycoformal."

Dr. Arthur Schlossmann of Dresden, Prussia, has made use of this combination with much success. A special apparatus has been constructed, consisting of a vessel in which water is boiled. The steam is allowed to enter a reservoir containing "glycoformal." From this reservoir, four pipes pass into the room to be disinfected. According to Dr. Schlossmann's experiments, all forms of microbes are destroyed completely in three hours, and his claims for this method are as follows:

"(1) The sterilization is absolute; (2) the closure of all cracks and clefts is not necessary; (3) the procedure requires only three hours; (4) there is no danger of explosions; (5) the method is cheap; (6) the glycoformal vapor is heavier than air, and therefore sinks; and (7) the total disinfectant powers of the gas are obtained." (*Berlin. klin. Wochensch.*, Vol. XXXV, page 550.) All windows and doors are opened wide for half an hour after such a disinfection, and then closed, and ammonia vapor or ammonia water introduced into the room, in proportion to the amount of formaldehyde which has been used. Finally, the windows and doors are again opened for awhile, and the room is ready for occupancy.

Another important and thorough study of this agent as a disinfectant, especially in its practical application to the disinfection of infected dwellings, bedding, clothing, books, etc., has been undertaken and reported on by Drs. William H. Park and Arthur R. Guerard of New York city, under the supervision of the New York city department of health. Their report has now been published in full. (*The Phila. Med. Journ.*, Vol. II, pages 514 and 571.) Their closing remarks and conclusions are as follows:

"Formaldehyde-gas is superior to sulphur dioxid as a disinfectant for dwellings: (1) because it is more efficient and rapid in its action; (2) because it is less injurious in its effects on household goods; (3) because it is less toxic to the higher forms of animal life; (4) because, when supplied from a generator placed outside of the room and watched by an attendant, there is less danger of fire.

"Apart from the cost of the apparatus and the greater time in-

volved, formaldehyde-gas, generated from commercial formalin, is not more expensive than sulphur dioxide, viz., from seven to eight cents per 1,000 cubic feet being the cost of the disinfectant in either case.

“Formaldehyde-gas is the best disinfectant at present known for the disinfection of infected dwellings. It is inferior in penetrative power to steam and dry heat at 230° F.; but, for the disinfection of fine wearing apparel, furs, leather, upholstery, books, and the like, which are injured by great heat, it is better adapted than any other disinfectant.”

Dr. Alvah H. Doty, health officer of the port of New York, has reported the results of a thorough investigation of this agent, as a disinfectant in his quarantine duties. The complete and quite extensive tests were made with the steel formaldehyde tank or chamber on the disinfecting steamer, *James W. Wadsworth*; also, in a room of 1,000 cubic feet space made expressly for the purpose in the laboratory of this department. He, apparently, lends his unqualified approval to this form of disinfection for ships. (*N. Y. Med. Journ.*, Vol. LXVI, page 517.) In close connection with these investigations, an interesting report is made upon this agent, with special reference to its chemistry in disinfection, by Mr. Ernst J. Lederle, Ph. D., consulting chemist to the health officers' department of the state of New York. (*N. Y. Med. Journ.*, Vol. LXVI, page 526.)

The U. S. Marine Hospital Service have undertaken researches at their Hygienic Laboratory and have concluded that rapid disinfection is obtained with high percentages of formaldehyde. Dr. Ezra Kimball Sprague of the Marine Hospital service makes the report (*Medical News*, Vol. LXXI, page 763) and gives the results of six experiments on pillows, mattresses, etc. He concludes as follows:

“While the specific time for exposure in vacuum with 20 per cent. of gas is one hour, and for the present it will not be lessened, the foregoing experiments demonstrate that the disinfection of clothing and articles of like nature can be accomplished in thirty minutes. It is not improbable that with higher percentages better results will be obtained, and in a future article it is intended to give the results of further experimentation; but enough data have already been given to prove that with formaldehyde rapid and efficient disinfection may be secured, and that, without injury to the most delicate fabrics.”

The possibilities and limitations of formaldehyde as a disinfect-

ant have been thoroughly investigated by Dr. Charles Harrington of the Harvard Medical School, Boston, Mass. He has carried on a series of nine interesting and important experiments, and draws the following conclusions: "Formaldehyde has extraordinary power as a surface disinfectant, greater than that of any other known substance. It is not, however, absolutely thorough in all cases even as a surface disinfectant, as is shown by the results of the experiments in room-disinfection. Ordinary bacteria, and those of the highest resistance as well, when freely exposed to an atmosphere produced by vaporizing approximately 110 cc. of formalin in each 1,000 cubic feet of space, are killed within two and one half hours (Experiment 8). An atmosphere produced by approximately 290 cc. in each 1,000 cubic feet will sterilize ordinary pathogenic bacteria, such as typhoid, staphylococcus aureus, etc., within a half hour, and anthrax in from forty-five to sixty minutes, and will destroy typhoid protected by an envelope of cotton cloth in one hour, staphylococcus aureus similarly protected within two, and anthrax, also in cotton, within three hours (Experiment 6). An atmosphere of approximately 435 cc. in each 1,000 cubic feet, which would be in the proportion of about a quart to a room fifteen feet square and ten feet in height, will destroy all exposed organisms within a half hour, and others protected as above within an hour and a half (Experiment 5). The penetrating power of the gas depends largely upon the conditions as to moisture. Through dry pervious substances, as cotton cloth, absorbent cotton, hair, etc., it appears to penetrate more or less easily, but not always in sufficient amount to exert germicidal action, as is shown by the results with the tube cultures and flasks of decolorized fuchsin, which results were stoppered in exactly the same manner. In the presence of moisture the penetrating power is practically *nil*. The experiments can lead to but one conclusion, therefore, that formaldehyde must be regarded and employed as a surface disinfectant, and can never be anything else, in spite of its power of penetration under favorable conditions. This conclusion is in accord with that of Aronson, Pfuhl, Niemann, Bosc, Roux and Trillat, and Vaillard and L  moine.

It has been asserted by a number of authors, among them Aronson, Pfuhl, and Rosenberg, that formaldehyde exerts no deleterious action on higher organisms. The results produced by the gas on the two rabbits used in the first experiment were sufficiently certain to demonstrate the falsity of this theory and to render further experiment on my part in this direction unnecessary. The

experience of several others, who are daily engaged in the work of house disinfection, has shown that animals, such as dogs and cats, which have accidentally been confined in rooms undergoing formaldehyde disinfection, rarely survive the operation when the latter is properly carried out. On the other hand, the experience of these same persons is that insects, such as roaches, flies, and bed-bugs, are not much affected. My observations in this direction have been limited to the cases of occasional flies, and one dish of cockroaches, all of which were killed." (*Amer. Journ. of the Med. Sciences*, Vol. CXV, page 56.)

In line with Dr. Harrington's conclusions Dr. G. W. Goler, health officer of Rochester, N. Y., has written a letter to the editor of the *N. Y. Med. Record* (Vol. LIII, page 501) entitled "Does Formaldehyde Disinfect?" and after enumerating five experiments concludes: "The results of these experiments lead me to believe that the value of formaldehyde as a disinfectant, with a sufficient penetrating power thoroughly to disinfect in practice, has not yet been proven."

Those who are still in doubt as to which of the many generators to use will be interested to read a report made by Dr. Joseph McFarland of Philadelphia, Pa., entitled "The Efficiency of the Formaldehyde Generators, with Remarks upon Their Use" (*Univ. Med. Mag.*, Vol. X, page 709), in which he figures three of the best generators.

Drs. F. G. Novy and H. H. Waite both of Ann Arbor, Mich., and connected with the State Board of Health have made careful experiments on "The Disinfection of Rooms" and made a report to the Michigan State Board of Health in May last (*Med. News*, Vol. LXXII, page 641) and concluded by stating that

"The following general directions for the disinfection of rooms may be of value:

"1. All cracks or openings in the plaster or in the floor or about the door and windows should be caulked tight with cotton or with strips of cloth.

"2. The linen, quilts, blankets, carpets, etc., should be stretched out on a line in order to expose as much surface to the disinfectant as possible. They should not be thrown into a heap. Books should be suspended by their covers so that the pages are all open and freely exposed.

"3. The walls and floor of the room and the articles contained in it should be thoroughly sprayed with water. If masses of matter or sputum are dried down on the floor they should be soaked with

water and loosened. No vessel of water should, however, be allowed to remain in the room.

"4. One hundred and fifty centimeters (five ounces) of the commercial 40 per cent. solution of formalin for each 1,000 cubic feet of space should be placed in the distilling-apparatus and as rapidly distilled as possible. The keyhole and spaces about the door should then be packed with cotton or cloth.

"5. The room thus treated should remain closed at least ten hours. If there is much leakage of gas into the surrounding rooms a second or third injection of formaldehyde at intervals of two or three hours should be made."

Dr. Jacob R. Johns of Philadelphia, Pa., has made a report of one instance where immunization and formaldehyde disinfection resulted in the stamping out of an epidemic. It was an epidemic of diphtheria in the "Shelter for Colored Orphans" in Philadelphia on Nov. 15th last, and, with two exceptional cases which are accounted for, no instances of contagious or infectious disease have occurred since the date of disinfection. Dr. Johns concludes as follows :

"In the matter of disinfection it may be of interest to note briefly some of the many objects exposed in the apartments to the gas. The dormitories contained only articles of bedding and furniture, the floors being bare and very clean. The bed-clothes were disposed upon chairs, the mattresses turned partly upon edge, and all drawers partly opened.

In the play-rooms, the multitudinous belongings of the children, including books, scrap-pictures, etc., were scattered loosely about the floor and tables. The private closets were widely opened. In the school-rooms, each desk was opened and the books so disposed as to make them accessible to the gas. The apartments having most articles exposed were subjected to a larger quantity of gas per 1,000 cubic feet, and the room kept closed a longer time. No room was opened inside of four or five hours. In every particular the results were gratifying, and serve to illustrate, in a forcible manner, what may be accomplished in stamping out epidemics by the proper application of these recognized scientific measures. (*Phila. Med. Journ.*, Vol. I, page 606.)

Drs. J. Petruschky and G. Hinz of Danzig, Prussia, have carried on a series of comparative experiments on "The Disinfection of Clothing with Formaldehyde-Gas" by exposing clothing and other household material to the effects of both the ordinary vapor as produced by the usual generators and that of a forced current of

the vapor. They claim to have proven that the forced current will thoroughly disinfect inside of an hour. They found that occasionally there were some spores which resisted even this forced current, but they conclude that it is by far the best of all the methods of disinfection. (*Deut. Medicin. Wochensch.*, Vol. 24, page 527.)

Dr. Edward Martin has investigated the subject of "The Sterilization of Urethral Instruments with Paraform" (the polymeric form of formaldehyde) and read a report of his results before the Philadelphia County Medical Society on Jan. 12th last. (*Phila. Poly.*, Vol. VII, page 60.)

Drs. H. O. Reik and W. T. Watson of the Johns Hopkins Hospital, Baltimore, Md., have made some experimental tests with apparatus for sterilizing instruments with formaldehyde, and draw the following conclusions:

"1. A lamp will burn in any absolutely closed chamber long enough to generate more than sufficient formaldehyde for its disinfection.

"2. In a chamber of one cubic foot space three grains of paraform in fifteen minutes, or five grains in ten minutes, will accomplish disinfection.

"3. The expense of such disinfection, including the cost of paraform and alcohol, will not exceed one cent, and the labor involved is almost nil.

"4. For the disinfection of small instruments, such as those used by ophthalmologists, otologists, laryngologists and dentists, it is by far the most convenient and speedy method.

"5. This method, probably better than any other, for the work designed, carries out the principles of disinfection laid down by Koch, viz.: 'The absolutely certain destruction of all pathogenic organisms, in the shortest possible time, at the least expense and with a minimum of injury to the object of disinfection.'" (*Bulletin of the Johns Hopkins Hospital*, Vol. VIII, page 261.)

Dr. Reik made a supplementary report which should be read in direct connection with the above. (*Bulletin of the Johns Hopkins Hospital*, Vol. IX, page 82.)

Dr. P. I. Rajewski has investigated the subject of the sterilization of catgut, and recommends that it be sterilized with a 1 per cent. solution of formaldehyde while the gut is in the process of being manufactured, thus accomplishing the sterilization of the interior. The exterior may be kept sterilized by the various means now used. He advises the chemical action of formaldehyde upon the animal product as being more reliable than the simple super-

ficial physical contact of the vapor. (*Centralbl. für Chirurgie*, Vol. 24, page 1147.)

Dr. Charles Harrington of the Harvard Medical School, Boston, Mass., recommends "A Simple Method for the Sterilization of Catgut." He carried on a series of nine experiments and after putting the catgut to the critical test of breaking under a strain, he failed but once in 481 tests to break at the knot. (*Amer. Journ. of the Med. Sciences*, Vol. CXV, page 544.)

Dr. Charles Harper Richardson of Albany, N. Y., has proposed an apparatus for sterilizing dressings by formaldehyde and has made a report giving a cut of the apparatus, with bacteriological provings. (*N. Y. Med. Record*, Vol. LIII, page 861.)

Drs. A. Landerer and C. Krämer both of Stuttgart, Germany, call attention to the fact that under ordinary conditions all the known disinfectants do not appear to destroy the germs of infection below the surface of the skin and therefore complete disinfection is not accomplished. He, however, has succeeded in producing absolute asepsis by using a 1 per cent. solution of formaldehyde applied on an airtight compress after cleansing the parts well. Such a compress is left in contact from 12 to 36 hours, changing only once or twice. He claims that the solution penetrates the skin and destroys the germ. (*Centralbl. für Chirurgie*, Vol. XXV, page 209.)

The compress form of application in the same strength as above is reported to be efficient in the treatment of slight burns. From observations actually made, all the pain ceases in about twenty minutes and even the redness about the burned part disappears after repeated applications of the compress with additional solution.

A series of experiments are being carried on by the Chicago Health Department whereby they will claim that disinfection may be carried on with formaldehyde without apparatus. They evidently are making use simply of any number of sheets hung throughout rooms and apartments and sprinkling the formaldehyde solution upon them, whereby they claim that the dissipation of the vapors is sufficient to penetrate all parts.

This agent is now being tried in every known case where disinfection is called for, and the number of affections which are now reported where it is found of value, are so numerous that it would be quite impracticable to enumerate them here. A few, however, of the prominent ones will be mentioned.

Dr. George L. Richards of Fall River, Mass., has made use of it

in atropic rhinitis. He mentions that it is quite irritating even in dilute solutions, and therefore he advises a preliminary spraying of the nose with hydrochlorate of cocaine solution. He claims that the crusts developed in this affection are diminished in number after its use, and the unpleasant odor is entirely destroyed. (*Laryngoscope*, Vol. IV, page 283.)

Dr. H. Moulton of Fort Smith, Ark., has made use of formaldehyde in the treatment of blepharitis, and presented a short note on the subject at the meeting of the American Medical Association held at Denver, Col., in June last. He concludes as follows:

"I do not wish to say that I have not found benefit in many cases from the use of other drugs, or that formalin is a permanent cure, but the proportion of cases benefited and the measure of relief afforded by this remedy is so vastly superior in my hands to other remedies, that I cannot do otherwise than call attention to it." (*Journ. Amer. Med. Asso.*, Vol. XXXI, page 641.)

Dr. J. T. McShane of Indianapolis, Ind., has reported on a case of "Acne Rosacea Treated by Intradermal Injections of Formaldehyde" and concludes: "The results have been most gratifying, and now, after three months' observation and treatment, the face is normally white with little or no tendency to recurrence of the disease." (*Journ. Amer. Med. Asso.*, Vol. XXIX, page 1261.)

In axillary and palmar hyperidrosis, it has been recommended to use ten to twenty grammes (two and one half to five drachms) of formalin, with thirty grammes (about one ounce) of vaselin, as an effective application to diminish the amount of sweating, and destroy the characteristic odor. A one per cent. solution of formaldehyde, however, has proved effective in hyperidrosis of the feet, when applied once or twice, or even more times a day.

Dr. Toppel of Düsseldorf, Prussia, has experimented in this line, has verified the above conclusions, and, as might be expected, has found that this disinfectant solution is just as efficient in counteracting the disagreeable odors of the anal and genital regions. He makes use of a solution of the strength of fifteen cc. to the litre (a tablespoonful to the quart) of water. He has made use of it in cases of vaginal catarrh, in certain forms of cystitis, and in decubitus. In the latter, it appears to hasten the sloughing of the necrosed parts. The odor left on the hands in the dissecting and autopsy room is entirely removed by using this solution. He also confirms the observations of others as to its efficiency in deodorizing rooms and their contents. (*Muench. Med. Wochens.*, Vol. XLV, page 689.)

At a recent meeting of the Odontological Society of Great Britain, Mr. J. F. Colyer read a short paper on "Formaldehyde in the Treatment of the Dental Pulp," with especial reference to a formaldehyde cement under the name of "formagen." He referred to the use of "formalin" (40 per cent. solution of formaldehyde), and stated that Lepkowski had found it gave excellent results with the pulp, as far as regarded its germicide and preservative properties, but the pain caused by its use was a distinct disadvantage. "Formagen," which was composed of a fluid and powder said to be charged with formaldehyde vapor, gave, on the other hand, apparently good results without pain. Various analyses of formagen, which Mr. Colyer had obtained, were referred to, and it was pointed out that the main constituent of the powder was calcium carbonate and a caustic alkali, the fluid being methyl salicylate, eugenol, and phenol. The bacteriological researches of Max Bauchwitz as to the use of formagen were referred to, and also the results obtained by A. Kunert. Mr. Colyer stated that he had used the drug in almost every class of exposed and septic pulp, and had found excellent results follow, although the time he had used it did not permit of him forming a very definite opinion as to whether the results obtained would be quite permanent. (London *Lancet*, Vol. I for 1898, page 723.)

A so-called "geraniated formol" is reported to be almost a specific in cases of toothache, and in dental operations. Twenty per cent. of geranium oil is added to formalin in alcohol, to produce this effective analgesic and antiseptic of a pleasant odor.

"W. C. Robinson, the chemist of the Philadelphia Board of Health, has recently called attention to the introduction of formaldehyde as a milk preservative, as a substitute for other more easily detected chemicals like boric acid, or salicylic acid. This new adulterant is now being widely advertised in the local market, and it is presumed that it is extensively employed. The city milk inspectors have been ordered to be on the lookout for this latest adulterant, and have received instructions for detecting its presence in milk. They advocate that suspected samples of milk be treated with small quantities of a mixture of sulphuric acid and ferric chloride, which produce, even with a very weak solution of formaldehyde, a distinct purplish-violet reaction. The test is an absolute one, Mr. Robinson claims, and should simplify the detection of this formerly-considered undetected chemical." (*Med. News*, Vol. LXXII, page 601.)

It is reported that a one per cent. solution of formaldehyde,

diluted to one tenth, is an effective preservative for solutions of cocaine.

Mr. Cecil H. Leaf, demonstrator of anatomy at the London hospital, England, recommends formalin as an injecting solution into the lymphatic vessels of the dead subject, for demonstrating purposes, claiming that the usually used coloring matters are unsatisfactory, because they stain the surrounding tissues as well as the vessels. This solution hardens and preserves the relations of the viscera of the subject. He has made a report of his observations in a paper entitled "A Method of Injecting the Lymphatic Vessels," and concludes as follows:

"(1) Quite possible to render the lymphatic vessels sufficiently plain for dissection purposes, by the injection of a large quantity of formalin solution; (2) the fresher the subject, the greater the probability of success; (3) as much pressure as possible (short of rupturing the heart or any large vessel) must be used; and (4) in the inguinal region, at any rate, and possibly in other parts of the body, a communication exists between the veins and lymphatic vessels." (London *Lancet*, Vol. I for 1898, page 1680.)

Prof. H. Opperman of Berlin, Germany, has observed that any substance which dissolves in ammonia solution, or combines with it, is capable of combination with formaldehyde, thus producing a much more effective disinfectant, deodorizer and preserver, and in some cases offering an efficient therapeutic agent.

Mr. Carl E. Smith, working for the research committee of the revisors of the United States pharmacopœia, proposes a modification of Legler's ammonia method for testing formaldehyde, yielding good results. (*Amer. Journ. Pharmacy*, Vol. LXX, page 86.)

Gaiethol is a derivative of guaiacol, in which the methyl radical is replaced by an ethyl radical, and is, substantially, guaiacol with an additional carbon atom added. It is, chemically, the monothylic ether of pyro-catechin. It is offered in the form of an oily liquid, insoluble in water and in glycerin, but readily soluble in alcohol, chloroform, and ether. It crystallizes at a low temperature, in colorless crystals. It is proposed as a mild substitute for guaiacol, in the treatment of pulmonary tuberculosis, but its analgesic property is claimed to be more marked. It has been given in five-drop doses in milk, three times a day. It has also been applied locally for the relief of pain, or as a 10 per cent. emulsion in glycerin. Again, in the form of an ointment, one part to six of vaselin. By some observers, it is claimed that its internal administration shows no advantage over guaiacol.

Dr. de Buck does not think very favorably of it, although he reports some fair results, as an external application in neuritis and neuralgia. He reports a case of very painful tuberculous cystitis, which he relieved by the glycerin emulsion, after injections of silver nitrate and corrosive sublimate had failed. Severe coxalgia has been much relieved by its use, and he urges further clinical use of it.

Gelante, the skin dressing composed of gelatin and tragacanth, has received no attention in the medical literature of the year.

Glonoin (nitroglycerin) continues to have its various uses, and many practitioners resort to it oftener than others.

Dr. Lawrence F. Flick of Philadelphia, Pa., has made good use of it as a hemostatic in hemoptysis, and he reports his results in the form of a paper. (*Phila. Med. Journ.*, Vol. I, page 344.) He writes as follows:

"The routine treatment for hemoptysis, as laid down in the text-books, is the use of astringents and depressants. Opium, ergot, tannic and gallic acids are recommended, as also a free use of ice and salt. Variable results have been obtained by these agents, and occasionally a case has arisen which would not yield at all. It was such a case that caused me to reflect upon the rationality of the text-book treatment, and to seek a new one."

He then relates two of his cases, and concludes as follows:

"While my experience is too limited to warrant final conclusions about the action of the drug, in the cases in which I have used it, the result has been so uniform and prompt that I feel justified in calling the attention of the profession to it. That the action was due to the nitroglycerin, unless the results were mere coincidences, cannot be doubted, as I used absolutely no other treatment, not even ice, and gave the nitroglycerin, in most instances, in water."

It has been used in small doses in the treatment of spasmodic croup when other agents have failed, and in persistent attacks of angina pectoris, in the form of the following formula:

Solution of glonoin 1 per cent.	. . . . . 1 drop
Cherry laurel water	. . . . . 10 grammes (154 grains)

either in the form of 1 cc. (16 minims) subcutaneous injections, or by the mouth in one or two drop doses.

Glutol (formalin-gelatin) has not been commented upon during the year under this head, although its use is extending. The surgeon is nowadays simply reporting his use of formalin in a

general way, and not specifying the form in which he makes use of it; thus formalin in the form of a gelatin would not necessarily be specified under the name of glutol.

Guaiacetin (the new compound offered as a substitute for creosote and guaiacol in the treatment of pulmonary tuberculosis) has had little mention made of it during the past year. One of the writers alluding to it is Dr. Wilhelm Gemünd, of Munich, Bavaria, who has written an article on "Hyperleukocytosis Induced by Guaiacetin in Experiments on Animals" (*Munch. Medicin. Wochenschr.*, Vol. XLV, page 229). He experimented in the same line begun some time previous by Risel with dogs and rabbits, and made quite a study of the bactericidal action of the blood of animals before and after administering this agent.

Guaiacol (the chief constituent of creosote) and its various combinations have as a rule been successfully used throughout the medical world during the past year. There are, however, still some observers who doubt the prominent position given to it by others. Prominent among the class is Dr. Edmond Chaumier, of Tours, France, who has written an article on "Creosote and Some of its Derivatives" (*London Lancet*, Vol. I for 1898, page 222), in which he comments upon the various derivatives, as follows: "Guaiacol, which for some time received much praise, no longer holds its own. It was thought to be the active principle of creosote, and it was believed that as such it could replace the latter, but its use, either by the mouth or as a hypodermic injection (in oily solution) has not been attended with satisfactory results. On the contrary, it has frequently caused local complaints, pain, indurations, boils, abscesses, etc. Guaiacol, while possessing all the disadvantages of creosote, is in no way superior to the latter, and at present it is more and more discarded, being now only applied as a remedy to rub into the skin as a fever alleviant, and on a bandage on wounds to produce anæsthesia. It possesses, no doubt, antipyretic qualities, but the reduction of the temperature is of short duration and may be followed by excessive perspiration, collapse, or at least fainting, giddiness, and nausea. Owing to these various drawbacks, guaiacol does not rank among the more important antipyretics. As an analgesic, although inferior to cocaine, it may be found useful, as it can be left without risk to be handled by the patient, and may also be found serviceable in skin diseases, particularly lupus, and as a dressing for wounds."

Some varying reports have been made upon its application in infantile enteric fever, but a successful report comes from Dr. T.

Rodini, of Ripalta-on-Trigno, Italy, who has applied it at that stage of the fever in which the temperature becomes uniform. His case was that of a three-year-old boy showing symptoms of persistent drowsiness, decided cardiac weakness, and hypostatic pulmonary congestion, with a temperature of 40.5° C. (105° F.). A cold-pack had previously been applied, but produced cardiac collapse and therefore was abandoned. The first result of the application of the guaiacol was a reduction of one degree in temperature within a quarter of an hour. By half an hour the temperature was down almost to normal, and copious sweating had set in. After four hours, however, the temperature began slowly to rise. The applications were continued regularly, morning and evening, on the subsequent days, with much benefit and no ill effects. Defervescence took place during the third week, and the treatment was kept up to that time.

Dr. James Donelan, of the Italian Hospital, London, England, makes a report on his results of "The Guaiacol Treatment of Laryngeal Tuberculosis, Especially by Submucous Injections" (London *Lancet*, Vol. II for 1897, page 1649), in which he claims that guaiacol stands in the front rank in the treatment of tuberculosis affecting the respiratory system. The injections were made by the special syringe of Dr. W. F. Chappell, of New York.

Dr. J. Edward Squire, of the North London Hospital for Consumption (England), makes his report on "The Administration of Large Doses of Guaiacol in Phthisis" (London *Lancet*, Vol. I for 1898, page 993). He reports that it is quite an established fact that patients can take pure liquid guaiacol in doses of 11 cc. (180 minims) in a single day, not only without toxic effects but apparently with decided benefit.

Dr. Adolph Goldhammer, of New York city, reports on the use of this agent in chronic coughs, and yet he claims its value in this direction is not sufficiently established. Having had remarkable success in many cases of cough of long standing in which no tuberculous element could be recognized, he would go so far as to suggest its use in every case of cough of more than two weeks' duration. He relates five of his cases, and concludes as follows:

"As regards the administration of guaiacol, it is very well borne in the majority of cases, if well diluted with milk, although it has a nasty taste. It very seldom deranges the digestion. Those who cannot bear its odor or taste can easily take it in capsules. I usually begin by giving five drops three times a day, in milk, to an adult. The dose may then be increased one drop daily, up to

fifteen drops three times a day. A child one year old can take two drops at a dose to start with, and then the dose may be increased slowly to four or five drops." (*N. Y. Med. Record*, Vol. 52, page 594.)

The following formula has been suggested in the treatment of pertussis :

Guaiacol	1 part
Eucalyptol	1 "
Sterilized olive oil	10 parts

of which 2.5 cc. (40 minims) are to be injected subcutaneously each day.

This agent has been used in quite a series of cases of serous pleurisy by applying it to the skin, whereby the exudations were made to entirely disappear. The applications were well borne and the local irritation was slight—so trifling, indeed, that several applications could have been made if required. In the series of cases seven applications were about the limit.

Dr. J. Lenz has made a study of some 52 cases in which he used this agent in the treatment of epididymitis, of which fifty were of gonorrhœal origin. Either a ten per cent. ointment with vaselin was employed, or one of five per cent. if the scrotum was tender. The latter was finally washed with soap, and then with ether, before the application was made. If the application was made in the acute stage, he found that the fever, pain, and swelling disappeared in from three to five days. Its action appeared to be less active in subacute cases, and very slight in chronic cases. The absorption of the guaiacol appeared to be very rapid, as it made its appearance in the urine in from fifteen to thirty minutes, and none was found there in twenty-four hours, thus showing its rapid elimination as well.

In the same article by Dr. Chaumier alluded to above, he summarizes on guaiacol-carbonate as follows :

"It has given excellent results in medical practice, particularly abroad. I use it sometimes, but much prefer creasotal. Still guaiacol-carbonate should not be discarded as a therapeutic agent. In a prolonged illness like tuberculosis the patient frequently objects to taking continually the same remedy, and there will then be no objection to replacing for a time the creasotal by guaiacol-carbonate. In affections other than tuberculosis, guaiacol-carbonate has been strongly recommended for typhoid fever; and, according to Hölscher, even puerperal fever can be treated suc-

cessfully with it. This medicament will also be found useful as a dressing and in many cases can replace iodoform for this purpose. I have tried other derivatives of creasote, such as oleo-creasote, benzoate of creasote, and phosphate of guaiacol; but all these remedies are very rarely employed although some could be made to render certain services."

Dr. W. Hesse of Dresden, Germany, has made a report of his results in six experiments upon dogs with the idea of determining the toxic action of creasote and guaiacol in comparison with that of their carbonates, and concludes that both creasote and guaiacol in large doses are poisonous, resulting in death through their corrosive action. On the other hand that their carbonates even though in large doses have practically no influence upon the system. (*Deut. Medicin. Wochensh.*, Vol. XXIV, Therap. Beilage, page 11.)

The use of guaiacol carbonate has grown considerably and is evidently the compound most largely preferred. Much has been written concerning it during the past year, and therefore only the most prominent allusions can be noted here. Dr. Gilbert A. Bannatyne of Bath, England, has apparently changed his mode of treatment of rheumatoid arthritis on account of the success obtained with guaiacol carbonate. He has used such other agents as creasotal and benzosal but finds the former far more useful. His previous practice had been to use creasote and guaiacol simply, but they give evidence of considerable intestinal irritation, are too caustic and will coagulate albumin. Almost immediately, even in severe cases, relief from pain and swelling takes place and the local heat over the affected joints disappears. From his present observations the presence of nephritis appears to be the only contraindication for its use. (*Edinburgh Med. Journ.*, Vol. III, new series, page 60.)

The valerianate of guaiacol appears to be favored by some. Dr. J. W. Wainwright of New York city relates his recent therapeutic application of the valerianates of creasote and guaiacol in a paper read before the Section on Materia Medica, Therapeutics, and Pharmacy at the last meeting of the American Medical Association, held in Denver, Col., in June last. He makes a brief abstract of three clinical cases, and concludes as follows:

"I have reported these cases, they being typical of many cases I have been treating. Am using these preparations extensively in other cases, and have had uniformly good results."

"The valerianates are being used at the Loomis Sanatorium for Consumptives, Liberty, N. Y. Dr. Stubbett, the physician in

charge, in an article published in the *New York Medical Journal*, April 2, 1898, says that 'geosot, valerianate of guaiacol, proved an agreeable form of administering guaiacol. It was found less irritating to the stomach than creasote.' I have very little time to refer to other valuable uses of eosot and geosot, such as their value in overcoming irritability of the stomach as in cases reported by Dr. W. E. Anthony of Providence, R. I., where in the nausea of early pregnancy and the sick stomach of Bright's disease of the kidneys they gave prompt relief. Having indicated some of the applications of the valerianates of creasote and guaiacol in clinical medicine and surgery, with one further reference I will close. Surgically Dr. Rieck refers to two cases of lupus of the face cured by applications of geosot and also to two cases of tuberculosis or white swelling of the knee and hip joint cured by injections of geosot into the capsule of the joint. Dr. Rieck also positively states that the valerianate of guaiacol cures bone tuberculosis, though not through the usual channels of absorption but by direct local application and declares that there is no question but that the use of the valerianate of guaiacol will permit of a marked extension of conservative measures in the treatment of tuberculosis of the bones and joints." (*Journ. Amer. Med. Assoc.*, Vol. XXXI, page 821.)

The phosphite of guaiacol has been recommended under the name of "guaiacophosphal," which appears as a colorless, crystalline salt with a very distinct odor of guaiacol. It is readily soluble in water and melts on heating. It is claimed to contain 95 per cent. of guaiacol and 5 per cent. of phosphorus. The simple statement is made that it presents distinct advantages over the other compounds heretofore used.

Guaiacol sulphonic acid has been brought forward and the potassium salt of this compound goes by the name of "thiocol." It has been recommended by Dr. C. Schwarz as a new remedy in the treatment of tuberculosis. It is offered in the form of a fine, colorless powder with a somewhat bitter taste when first placed on the tongue, which will turn to a sweetish taste. It is claimed to contain about 60 per cent. of guaiacol. It is quite odorless, readily soluble in water, non-irritating to mucous membranes, and is readily absorbed—these advantages are claimed to be sufficient to recognize its superiority. Dr. Schwarz advises as a dose from 10 to 14.5 grammes (154 to 220 grains) per day. He claims it increases the appetite and general body strength. The weight is increased and the cough much lessened. The purulent character

of the expectoration ceases, and the night-sweats and fever disappear. He recommends its trial in chronic bronchitis, typhoid fever, and intestinal catarrhs.

Another salt of guaiacol sulphonic acid is the calcium guaiacol-sulphonate which goes under the name of "guaiacyl." It is recommended to be used in aqueous solutions of from 5 to 10 per cent., and proves to be a very effective anæsthetic in minor surgical operations and in dentistry. It is offered in the form of a grayish-blue powder, readily soluble in water and alcohol, but not in oil. It is claimed that the solutions are not irritant, are non-toxic, and show no caustic action.

Dr. A. Breton of Dijon, France, reports his continued satisfactory results in the treatment of tuberculosis by the injection of the following mixture:

Iodoform	.	.	.	.	1 gramme (15 grains)
Guaiacol	.	.	.	.	4.5 grammes (75 ")
Sterilized olive oil	.	.	.	.	93 " (3 ounces)

He claims to have made over 500 injections, all of which showed distinctly favorable results in the way of relieving pulmonary symptoms and producing a general increase in body weight.

Guaiaguin (quinine guaiacol-bi-sulphonate), the new substitute of last year for guaiacol, has not appeared in the current medical literature of the past year although much was expected from it. Confirmatory clinical reports were surely looked for.

Guaiperol is the short name given to piperidin guaiacolate appearing in the form of colorless crystals with a slight creasote odor, soluble in water in the proportion of 1 to 30, but freely soluble in alcohol. It is recommended in the treatment of pulmonary tuberculosis, and has been known for some time past, but has not been used very generally. One of the most recent reports is from the Hospital for Consumption and Diseases of the Chest, at Brompton, England, from which Dr. Acland, the physician in charge, reports two cases of pulmonary tuberculosis treated by this agent. The report is as follows:

"In the *British Medical Journal* for January 16th, 1897, is a paper on 'The Treatment of Phthisis by Guaiacolate of Piperidine,' and as the drug has not been at present very extensively used, the two following cases are of interest as showing the same general conclusions as those arrived at by Dr. Arnold Chaplin and Dr. Tunnicliffe, namely, that the drug is safe, and well borne by the stomach, that it causes no unpleasant after-effects,

and that the patients improved in general condition while under its influence.

"CASE I.—W. M., aged twenty-seven, was admitted on December 1st, 1897, and discharged on March 19th, 1898. One sister had died of phthisis. He had cough, pain in chest, night-sweats, and dyspnœa for three years. The diagnosis was disseminated pulmonary tuberculosis, infiltration of both upper lobes, no softening or excavation. No tubercle bacilli were found in the sputum. He was treated with guaiperol, at first gr. 5, later gr. 10, in cachet three times a day after meals. While taking the drug he suffered no inconvenience; in fact, pain after food, which was one of his symptoms, disappeared, and appetite increased. Night-sweats disappeared and temperature and cough improved. No change was detected in the physical signs. The weight increased by 9½ lbs. While in the hospital he passed through an attack of influenza, which delayed his progress somewhat.

"CASE II.—J. M., aged twenty-one, was admitted on January 5th, and discharged on March 31st, 1898. Four uncles and aunts on his mother's side had died of phthisis. For twelve months he had had cough, night-sweats, sleeplessness, and loss of appetite. The diagnosis was: Chronic pulmonary tuberculosis, not very active. Infiltration and early softening of right upper lobe. Infiltration left apex. Tubercle bacilli were present in fair numbers in the sputum. Guaiperol gr. 5 in cachet three times a day after meals was given all the time he was in the hospital. The temperature was a little irregular at first, but improved later, and did not go above 99°. The night-sweats disappeared, and the appetite improved. No discomfort was experienced from taking the drug. As regards physical signs, the note on January 5th says 'numerous small *râles* over right upper lobe increased by cough.' The note on March 30th says, 'a few *râles* heard after cough over right upper lobe.' Weight, at first decreasing, ultimately increased by 1½ lb." (*Brit. Med. Journ.*, Vol. II for 1898, page 154.)

Holocaine, the new synthetic local anæsthetic offered as a substitute for cocaine, has received considerable attention during the past year. It naturally has been closely compared with cocaine, and its points of difference have been given special notice. At a meeting of the Chicago Ophthalmological and Otological Society in October last, Dr. F. C. Hotz of Chicago, Ill., read a short note on "*Holocaine vs. Cocaine*," giving the results of his observations. He concludes as follows:

"All these observations seem to show that the effect of holocaine is very quick, but superficial; it is, therefore, a very useful local anæsthetic for the removal of foreign bodies from the cornea, and for operations upon the conjunctiva; but, for deeper operations, and especially for those which involve the opening of the globe (iridectomy and cataract extraction), I regard cocaine as the more reliable anæsthetic." (*Journ. Amer. Med. Asso.*, Vol. XXIX, page 1012.)

At the December meeting of the same society, the subject was again brought up, with the following discussion, which is of interest. Dr. Hotz opened again as follows:

"At our meeting in October, I read a brief report of my observations with holocaine. Dr. Würdemann wrote me that his experience had been somewhat different, and suggested that we bring up the matter for discussion at this meeting. At the October meeting, I stated that holocaine was a very prompt, quick-acting anæsthetic, but seemed to me not to penetrate deep enough to make it of value for more extensive and deeper operations, especially one involving the opening of the eyeball. Since that time, I have used the remedy considerably, and the results are about the same."

Dr. Würdemann followed Dr. Hotz in the discussion, and said: "Würdemann and Black have used holocaine successfully in the following cases: Six cataract (simple) extractions, three cataract extractions with iridectomies, three cataract dissections, six iridectomies, eleven tenotomies, three tenotomies with advancement, six canaliculotomies, four chalazia, one sarcoma of conjunctival limbus, one pterygium, one curettement of corneal ulcer, two cauterizations of corneal ulcer, a number of foreign bodies in conjunctiva and cornea, as an instillation before the use of irritating medicines, such as silver, bluestone, alum, iodine, etc., and direct application of electrode to corneal and conjunctival surfaces.

"The anæsthetic qualities of holocaine equal those of cocaine, are no more irritant, and excel cocaine for operations on the bulb in the following: Its action is quicker and more lasting; it more thoroughly anæsthetizes the iris and deeper structures; it more thoroughly anæsthetizes inflamed surfaces; the anæsthesia may be indefinitely prolonged; the cornea does not desiccate under its use; it does not affect the tension; it does not act on the pupil or accommodation; it does not interfere with the nutrition of the tissues, but rather, increases their blood supply, and hastens healing; its solutions are antiseptic; it is, already, proportionately

cheaper. The only disadvantage in the substitution of holocaine for cocaine for anæsthetic purposes is, that bleeding is more free under holocaine. Although holocaine possesses these distinct advantages over cocaine, when applied as a pure anæsthetic, it has not, and probably will not, entirely supersede the older medicament."

Dr. Hertz.—"I cannot quite understand on what ground Dr. Würdemann claims that the absorption of holocaine is better than that of cocaine. If I am correct, the absorption is a sort of osmotic process, and has nothing to do with the circulation. We know that cocaine combined with atropin is often more readily absorbed than atropin alone, so that cocaine seems to increase the absorption. The pain from the application of holocaine is most intense in a one per cent. solution, and the after-effects last for hours. One great advantage of the drug is that it will keep, and does not undergo any chemic or bacteriologic change." (*Journ. Amer. Med. Assn.*, Vol. XXX, page 258.)

Drs. Félix Lagrange and Francis Cosse of Bordeaux, France, report the results of their extended study of the comparative value of holocaine and cocaine in ophthalmic practice. (*Recueil d'Ophthalmol.*, Vol. XIX, page 625.) They used a one per cent. solution of the hydrochlorate of holocaine in fifty cases, and found that it was perfectly efficacious whenever the conjunctiva was inflamed, giving a more rapid and complete anæsthesia, and showing no destructive effect on the corneal epithelium. He found it also preferable in operations for strabismus, chalazion, pterygium, and the extraction of foreign bodies from the conjunctiva and cornea. In iridectomy and cataract extraction, the two anæsthetics in the following combination are found to be most effective:

Holocaine	.	.	.	0.05 grammes (about $\frac{4}{5}$ grain)
Cocaine	.	.	.	0.10 " (" $1\frac{1}{2}$ ")
Water	.	.	.	10.00 " (" $2\frac{1}{2}$ drachms)

However, where it is desirable to lower the intraocular tension, they found a 2 or 3 per cent. cocaine solution to be much preferred.

Dr. M. J. Chevalier reports a little different account of its action, for he finds, practically, no difference between the action of holocaine and cocaine, as ordinarily used. He employed a 2 per cent. solution, by instillation, in forty-two operations. For this practice, he uses four or five drops at first, which is followed immediately before the operation by three or four more. He finds that frequently it is necessary to repeat this quantity, for the effect

does not last more than ten or twelve minutes. He cautions those who have occasion to use it in large amount outside of ophthalmic practice, for the reason that death has occurred without premonitory signs. (*Bulletin Général de Thérapeutique*, CXXXIV, page 609.)

Dr. P. Gires, of the faculty of Paris, France, has written a monograph as a contribution to the study of its physiological action, etc., which he has distributed among those interested. He sums up his conclusions in a concise way, and gives a short list of references in the form of a bibliography.

Dr. James Hinshelwood of Glasgow, Scotland, reported on the use of this agent in ophthalmic practice before the Section of Ophthalmology of the British Medical Association, at its meeting in Edinburgh, Scotland, last July. An abstract of his remarks will be found in the *British Medical Journal* (Vol. II for 1898, page 619), and closes as follows:

“Holocaine is therefore a most valuable agent for the production of anæsthesia of the eye. Its peculiar value lies in the fact that apart from the anæsthesia, it seems to have no further effect on the eye whatever. It seems to act simply by paralysis of the sensory nerve endings, and has no other action on the eye, leaving the pupil accommodation and tension quite unaffected. The rapid action of the drug is also a decided advantage, and in dispensary practice where one is dealing with a large number of patients, leads to a considerable saving of time. According to Heinz a 1 per cent. solution of holocaine is powerfully antiseptic, as proved by experiments on the growth of bacteria, and therefore boiling the solution to sterilize it is not necessary. This is a further advantage that the solution is itself a powerful antiseptic.”

A short discussion followed.

Dr. Robert L. Randolph of Baltimore, Md., reports his “Conclusions from Clinical and Bacteriological Experiments with Holocaine,” and concludes as follows:

“Holocaine, in so far as its anæsthetic properties are concerned, seemed in these fifty-four cases to have been sufficiently effective. In those cases where a test was made of the rapidity of its action, as for instance in foreign bodies in the cornea, pterygia, and after the application of irritating substances, the quickness with which anæsthesia was produced was striking. Whether the anæsthesia produced after two minutes is sufficiently profound to guarantee a painless iridectomy or a satisfactory cataract extraction I did not determine, but in those cases where operations of this character

were performed, and where the holocaine was instilled just as we do cocaine, no difference was observed in the anæsthesia from that produced by the latter.

The drying of the cornea and desiccation of its epithelium and the dilatation of the pupil, the absence of which phenomena has been noted by others, have been confirmed by my own observations. The absence of these two properties should recommend it for office use for the removal of foreign bodies, as it is well known that after the employment of cocaine in such cases, blurred vision and slight photophobia are often present for hours.

A 1 per cent. solution of holocaine has not only an inhibitory effect upon the pus organisms, but these organisms are killed when exposed to a solution of this strength for a certain length of time. No attempt was made to determine the point of time at which these organisms lose their vitality on exposure to holocaine, but it may be safely said that this point is somewhere within twenty-four hours. Furthermore, exposure to a 1 per cent. solution of holocaine for periods of five, ten, fifteen, twenty, twenty-five and thirty-five minutes showed in every instance a gradually-diminishing number of colonies in the plates, so that it is plain, in spite of the luxuriant growth around the glass rods and pieces of wood, many of the organisms were killed.

It may be said in conclusion, then, that a solution of holocaine of the strength employed in ophthalmic practice possesses distinct germicidal properties, a fact which it is evident enhances the value of this product." (*Johns Hopkins Hospital Bulletin*, Vol. IX, page 154.)

This article will also be found as having been presented to the Section on Ophthalmology of the American Medical Association at the meeting held in Denver, Col., in June last in the *Journal of the Amer. Med. Association* (Vol. XXXI, page 706).

Dr. E. Coosemans of Belgium, Brussels, reports the results of his comparative investigations on the relative value of cocaine and holocaine when used in the treatment of diseases of the ear and larynx. In these cases he classes holocaine as a perfect local anæsthetic. Its advantages are that it is about one fifth the price; that its effective solution is 1 per cent. whereas cocaine has to be used in strengths of 5 to 20 per cent.; it is non-irritating locally—unlike cocaine; it is not extremely bitter like cocaine; it produces no constriction in the larynx nor nauseating effects and causes no cerebral excitement; it shows its advantage when cauterization is to be employed by not contracting the vessels nor whitening the

tissues; it has no general intoxicating effect and lastly the solution is not only antiseptic but is stable and can be readily sterilized. (*Rev. hebdom. de Laryng., d'Otol. et de Rhin.*, Vol. XVII, second half, page 1473.)

Hydrargyrol is one of the newest antiseptics and comes from France. Chemically considered it is mercury para-phenyl-thionate. It is exhibited in brownish-red scale-like crystals, soluble in water and in glycerin, but insoluble in absolute alcohol. It claims to be an antiseptic superior to corrosive sublimate for it precipitates alkaloids and basic toxins, but not albumin. Bullions are completely sterilized with a solution of this agent in the proportion of 4 to 1000. The surgeon's instruments are not affected by even stronger solutions than this. By experiment it is found that solutions of 1 to 4000 are neither caustic nor irritating. Its toxic properties, as shown by experiments upon animals, are less than those of corrosive sublimate. Clinical reports have not yet been made outside of France.

Ichthalbin (ichthyol-albumen), the substitute for ichthyol, introduced to avoid the disagreeable properties of the latter, has not received much very definite attention. The most that is found in the medical literature is old reports repeated. The only mention of prominence of recent date is that of Dr. Wolffberg of Breslau, Prussia, who has written an article (*Wochensch. für Therapie und Hygiene des Auges*, Vol. I, page 257), where he states that he made use of 500 grammes (1 lb. $1\frac{1}{8}$ ozs.) in 40 cases, chiefly of glaucoma and iritis where it showed marked analgesic effects. His dose internally was 0.5 gramme (7.7 grains) three times a day, and he draws the general conclusion that it may be used very effectively both internally and locally. He has made use of it also in fascicular keratitis, pannus and the like.

Ichthyol (ammonium ichthyol-sulphonate) continues to be quite largely used. Drs. Combemale and Desoil "report that during fourteen months all the phthisical patients in the Charité Hospital at Lille were treated with ichthyol. Observations were made upon 110 patients, who were treated with this drug to the exclusion of all other medication for periods varying from one to six months. Pills and capsules of ichthyol were found to be the least objectionable preparations. The daily dose at the beginning of treatment was one gramme, but this was gradually increased to four grammes unless diarrhoea intervened, which was too strong to be controlled by moderate doses of dermatol. This happened in very few instances. If these doses of ichthyol were quickly tolerated

there was a prompt improvement in the general health of the patient, as manifested by the disappearance of night-sweats, a gain in weight and strength, a reappearance of the menses, etc. This desirable improvement rarely manifested itself before the end of a month, and it did not occur at all in two thirds of the patients. Expectoration was almost invariably lessened in amount and made more fluid, so that coughing was easier." (*Medical News*, Vol. LXXIII, page 144.)

Dr. Le Tanneur of Paris, France, reports having experimented with this agent for at least two years back in such affections as pulmonary tuberculosis, dry catarrh, purulent catarrh, bronchial dilatation with fetid expectoration and acute bronchitis. His uniformly successful results were obtained by giving it in doses of 260 milligrammes (about 4 grains). In some cases the cough disappeared completely within three days. He calls special attention to the importance of giving this agent in the form of gluten capsules in order that they may be sure to reach the intestinal tract before their action begins. He has found that it is best to administer this agent immediately after eating, and give from four to eight of the above capsules within the 24 hours, divided up according to the meals. (*Wien. Med. Blätter*, Vol. XX, page 783.)

Dr. Cieglewicz reports favorable results with a two per cent. aqueous spray in acute catarrhal laryngitis in both adults and children. The throat is not only sprayed with this solution but the patient is directed to inhale the same twice a day. The caution is given not to inhale too deeply as it is apt to produce nausea. He has found that spasmodic cough and hoarseness rapidly disappeared, and that suspected cases of false croup were rapidly relieved.

Dr. Domenico Pitruzzella, of Italy, has made good use of ointments in the treatment of gonorrhœa. He reports having tried several drugs, and ichthyol was among them. He used lanolin as a basis mixed with olive oil until a creamy consistency was obtained, when he applied it on a steel sound. His treatment lasted from 22 to 41 days, and is recommended in chronic cases only. (*Giorn. Ital. delle Malattie Veneree e della Pelle*, Vol. XXXII, page 442.)

Dr. Oskar Bodenstein of Berlin, Germany, has reported on his treatment of 50 cases, with excellent results, in which chronic vaginal gonorrhœa was treated with ichthyol-glycerin tampons. (*Deut. Medicin. Wochensch.*, Vol. XXIII, page 669.)

Dr. J. Leslie Callahan of Coventry, Eng., also reports his suc-

cess by the application of a 10 per cent. ichthyol and glycerin suppository. He has found such much more effective than the customary cotton-wool tampons, and much easier to apply, for it does not require the use of a speculum. (London *Lancet*, Vol. II for 1897, page 1231.)

Dr. Moncorvo, Jr., of Rio de Janeiro, Brazil, reported on his treatment of two cases of chyluria with ichthyol, before a meeting of the Paris Therapeutical Society on November 24, last. He had previously tried methylene blue and asaprol. He obtained his favorable results from doses varying from 0.5 gramme to 1.5 grammes (7.7 grains to 23.8 grains) given every 24 hours. Marked improvement was evident in the first few days, but it required some months before the chyluria entirely disappeared. (*Bulletin Gén de Thérap.*, Vol. CXXXIV, page 717.)

It has been reported that good results may be obtained in the treatment of measles by rubbing the body with a salve, morning and night, consisting of

Ichthyol	30 grammes	(463 grains).
Lard	90 “	(about 3 ounces).

This practice was suggested by the favorable results obtained by the same treatment in variola. Only one or two rubbings seems to be necessary to reduce the temperature to normal, when the patches gradually grow pale and disappear. It requires only four or five days to complete the results, after which a warm bath removes what is left of the salve. A report on results in variola is made by Dr. I. S. Kolbassenko of Russia, who employed this agent “in eighteen cases of variola, only two of which were fatal; these two cases were in a very serious condition when he undertook the treatment. From the time of appearance of the variola papules to the disappearance of the pustules, the following pomade is to be applied three times daily over the entire surface of the body: ichthyol, 10; oil of sweet almonds, 60; lanolin, 20. For economy in hospital practice vaseline may be substituted for oil of sweet almonds. During the stage of the prodromic fever until the appearance of the papule, *i. e.*, from the time variola is suspected, the author applies all over the body a liniment containing equal parts of essence of eucalyptus, of ether, and of lanolin. This treatment has the advantage of suppressing, so to speak, the itching in the state of eruption; of diminishing fever in the state of suppuration (the temperature will not rise above 39.5° C.); of diminishing the suppuration itself, and of shortening by one half

the desquamative stage." (*N. Y. Medical Record*, Vol. LII, page 739.)

Remarkable success has been reported also in variola after the use of collodion impregnated with 20 per cent. of ichthyol.

Dr. Frank Parsons Norbury has made good use of equal parts of camphor and carbolic acid, but found the following formula also useful:

Ichthyol	1 part
Ether	1 "
Flexible collodion	2 parts

which was applied with a camel's hair brush.

It is reported that the following formula is effective in the treatment of psoriasis:

Ichthyol	3 parts
Salicylic acid	3 "
Pyrogallie acid	3 "
Olive oil	10 "
Lanolin	10 "

A 10 per cent. gutta-percha plaster of ichthyol has been recommended for the treatment of insect bites by applying with a camel's hair brush.

A 30 per cent. acacia mucilage of ichthyol has been found to be of considerable service in the treatment of non-suppurating mastitis, by painting it on with a camel's hair brush. It appears to rapidly form an artificial covering which adheres well when dry, but can be readily removed by warm water, and by such application suppuration is at least very much diminished if not entirely prevented.

It has been reported that sulphur may be introduced into the system very effectively by means of ichthyol. Twenty to 30 drops of a 50 per cent. aqueous solution in a little peppermint water, beer, or coffee are given in gelatin capsules or in the form of a pill. The eructations which generally occur at first appear not to last long, and the disagreeable taste and odor may be masked for those who greatly object to such, by coating the pills.

It has been suggested that if ichthyol be distilled with steam it loses its disagreeable odor by reason of losing about one-half per cent. of its volatile oil. This product has not been tested sufficiently, either chemically or therapeutically, and therefore little is known of its practical results. The name of "desichthol" has been assigned to this product.

Iodocrol is the name which has been adopted for carvacrol iodide, one of the innumerable substitutes for iodoform. Carvacrol itself has been known in the past as possessing some antiseptic properties, and as being a constituent part of the oils of various species of *origanum* and *thymus*. Iodocrol is offered in the form of a yellowish-white, odorless powder, soluble in ether, chloroform, and sulphur, and is claimed to have increased antiseptic properties by virtue of the combination. It is reported that it has five times the bactericidal action that iodoform has. It has been used in the treatment of gout in pill form, in doses varying from 130 to 500 milligrammes (2 to 7.7 grains). Practically no clinical reports have yet appeared.

Iodoform has lost little if anything in recognition throughout the past year. The various substitutes which have been offered with more or less attractive claims have undoubtedly encouraged attention away from this agent, but during the past year, for one reason or another, the surgeons have fallen back on this old but very effective odoriferous agent. After considerable experimenting, it is now claimed that it may be manufactured electrolytically by an improved method. This method is described as being the result of the reaction which takes place when a dilute solution of alcohol containing potassium iodide and sodium iodide is subjected to an electric current of one ampère at the temperature limit between 65° and 70° C. (149° and 158° F.) whereby 80 per cent. of the iodides are converted into iodoform. The method has been slightly changed by forcing carbon dioxide gas through the solution, which increased the yield considerably.

Little has been accomplished in effective means of getting rid of the disagreeable odor which is inherent in this agent, but Dr. A. Coustan of Montpellier, France, claims that the odor rapidly disappears from the hands, for instance, if they be washed with orange-flower water.

Much has appeared in the literature throughout this year, and it would, as in the past, be quite impracticable to enumerate all that has been said about this agent. Therefore it must suffice to pick out some of the few comments to emphasize certain points. The following comment on its irritating property is of interest:

"In the *Indian Lancet* for December 1st, Mr. B. N. Chowdhry remarks that the properties of iodoform as described in the books are found different in practice; that the action of iodoform is not the same in all constitutions, and that it is not a non-irritant always. As an illustration of this, he relates his own experience.

Two years before writing his article he struck his leg against a board, causing a wound which gradually turned into an ulcer. As the sore was healing rather slowly, he dusted some iodoform powder over it, thinking it would hasten the healing process, but a few hours afterward he found that the sore had become very irritable, and there was a continuous copious discharge of an acrid, watery fluid. Wherever the secretion touched the leg, the skin became very irritable and rose in blisters which developed into fresh ulcers. These did not heal until after the use of the iodoform was discontinued and other medicines were applied.

"The author states that since then his skin has been very sensitive to the action of iodoform, and that whenever his hands and fingers come in contact with the drug, the skin becomes very irritable and blisters form all over the hands, principally on the fingers. They continue for two or three days, and then heal after the application of a caustic lotion.

"The author states that he has seen many cases in which iodoform caused irritation when applied to sores, and produced inflammatory pustules on the surrounding skin. This irritant property, he says, is retained even when the iodoform is mixed with boric acid. In such cases the author substitutes finely-powdered charcoal prepared by burning old leather. This acts in the same way as iodoform, but without showing any of its irritant properties." (*N. Y. Med. Journ.*, Vol. LXVII, page 103.)

At a meeting of the Leeds (England) Medico-Chirurgical Society on October 15th last "Mr. Mayo Robson read a paper on the treatment of surgical tuberculosis, such as psoas abscess, tuberculous joints, tuberculous abscesses connected with ribs, tuberculous disease of the vesiculæ seminales, etc., which he had been treating for a number of years by iodoform injections with very satisfactory results. He described the details of the methods he employed, and he pointed out how in one class of cases—namely, tuberculous joints—operations at the Leeds Infirmary for excisions had fallen from 63 in 1891 to 33 in 1896, although a much larger number of cases had been treated. He attributed this change to the large number of cases that were now being successfully treated by iodoform injections. He dwelt on the great importance of strict asepsis in performing the operation, and remarked that, even if no good were done, no harm could follow; but, according to his experience, benefit had accrued in nearly every case, and in many cure had resulted." (*Brit. Med. Journ.*, Vol. II for 1897, page 1339.)

As local tuberculosis takes such a prominent place among the cases which the surgeon meets, it was natural to at once have recourse to the use of iodoform as a curative agent. As was almost foretold it was found to be most effective, and its use has been largely extended by using it as an injection in all tuberculous areas. The knife has been discarded, at least temporarily, and joints are not necessarily at once cut into. Abscesses as well are first injected with this agent. After some little experience, it has been agreed that about a 10 per cent. solution is the most universally adopted.

During the past year a young girl was presented to the Paris Société de Chirurgie showing a perfect cure from a very large cold articular abscess of the knee by the use of iodoform. It had been punctured and immediately injected with iodoform-ether. This particular case proved the good effects which might be obtained from such injections.

Dr. R. Hammerschlag of Schlan, Bohemia, reports his remarkable success with intraglandular injections of this agent in tuberculous lymph glands. He even met with success in those cases where the surgeon is almost universally called in—such cases as the large celled hyperplastic lymph glands of tuberculous subjects. He describes his plan and states that he begins, in the case of patients who can afford to carry out his line of treatment, change of climate, baths and the like before the injections. He then anaesthetizes the glandular region and injects from 1 to 2 cc. (16.2 to 32.5 minims) of a 5 to 10 per cent. iodoform-glycerin emulsion, continuing on one side for a week and then changing over to the other side for the next week. He has records of six cases showing remarkably rapid and satisfactory results. The tumors subsided so that they were brought down to the level of the skin, and no scars were left. In one of his cases, where he made the injections in the periphery of the gland, he had equally good results and suggests that comparative experiments be tried in order to ascertain whether it is best to inject intraglandularly or periglandularly. (*Deut. Medicin. Wochensch.*, Vol. XXIII, page 826.)

This agent has been tried in comparison with the regular tonic treatment, including the administration of cod-liver oil, in the treatment of pulmonary tuberculosis with varying doses up to a maximum of 2 grammes (about 30 grains) per day. The results are not very convincing as yet, although the comparatively large number of cases under observation showed rather better results with iodoform.

Dr. E. L. Dawson of Camden, Arkansas, has published his results in the use of this agent in pulmonary tuberculosis by local application over the affected area of the lung. He reports as follows:

"In 1884 I began treating tuberculous patients with creosote, which was as much in evidence then as now, as a potent factor in the treatment of this scourge of mankind. I gave it in increasing doses so that 5, 10, and even 15 drops were taken three times a day. I was disappointed in every case in its efficacy. About 1893 I began to use strychnine, as recommended by Dr. Thomas Mays of Philadelphia, with apparently better results. It was administered hypodermatically to the physiological limit. Later I made combination of strychnine, iron, and quinine. It then occurred to me to try to make, as nearly as possible, a local application to the diseased area of lung that thereby I might exhibit, if not destroy, the tubercle bacillus. Iodoform suggested itself as the drug for this important mission, iodoform being largely eliminated by the mucous membrane of the lung, so I added it to the above combination.

"The results have been quite satisfactory in a rather large number of cases. No claim is made for it to cure advanced tubercular disease, nor to even mitigate *phthisis Florida*. But in incipient phthisis, when the patient begins to cough, accompanied by rapid pulse, pain in the chest, loss of appetite, and necessarily loss of flesh and strength, I have seen it act most advantageously.

"I have never seen iodoform recommended in consumption, and in order that others may try it, and either prove or disprove the claim I make for its utility, is my chief object in writing this article. I began its use about eighteen months ago, and I have given more than 2,500 pills made from this formula:

"R Strychnine sulphate (0.065 grammes) . . . gr. i
 "Reduced iron
 "Quinine sulphate } aa. (2.592 ") . . . ℥ij.
 "Iodoform
 "M Ft. pil. No. XL. Sig. One pill after each meal.

"Probably there is some incompatibility in this formula between quinine and iodoform, for the reason that not infrequently a patient will complain of pain in the stomach after taking a pill. I always speak of this to the patient and instruct him to discontinue taking the pills for a few days and then to begin again, being careful to keep the bowels well open. I have used the formula

above mentioned with the quinine left out, and there was no complaint made of pain in the stomach, yet I doubt if with as good results as when the quinine was present. One drawback to the internal administration of iodoform is the disagreeable eructations which follow." (*Med. News*, Vol. LXXIII, page 474.)

This agent has been used during the past year, to some extent, in the broncho-pneumonia of measles in the following form:

Iodoform	0.5 gramme (7.7 grains)
Cod liver oil	100.0 grammes (3½ ounces)
Oil of anise	2.0 " (30.9 grains)

The initial dose is 10 grammes (2 teaspoonfuls) per day, gradually increased up to the point of rejection by the stomach. Inhalations of a mixture of iodoform and turpentine are combined with the internal treatment. The great advantage claimed for this treatment, is that the pulmonary symptoms and fever pass away without delay, even though the treatment has not been begun early.

The external application of this agent in the form of a salve for acute articular rheumatism is recommended in the following formula:

Sodium salicylate	30 grammes (463.0 grains)
Iodoform	10 " (154.3 ")
Vaseline	100 " (3½ ounces)
Extract of hyoscyamus	5 " (77.2 grains)

At a meeting of the Paris Biological Society, on October 16th last, a case of atrophy of the optic nerves produced by a burn, was related in which iodoform was used in the treatment. The case was that of a woman who was burned on the thighs and arms by burning naphthalin. Iodoform was applied, and three weeks after she showed marked symptoms of amblyopia but no signs of general intoxication by this agent. Upon examination it was found that she showed a partial atrophy of the optic nerves, characteristic of atrophy by intoxication. The question, of course, was at once brought up whether the result was due to the burn or the application. It was pointed out that a burn generally produces lesions of an inflammatory nature which did not occur in this woman.

Dr. W. G. Porter read a paper at the Stated Meeting of the Philadelphia Academy of Surgery on December 6th last, entitled, "The Abuse of Iodoform," which may be of interest to those who

care to study the subject further. It will be found in the *Annals of Surgery* (Vol. XXVII, page 676).

Iodoformogen is another substitute for iodoform. It has been introduced by a firm in Ludwigshafen, Bavaria, and is a combination of iodoform and albumen, forming an apparently stable compound of special service in many cases of superficial wounds and ulcers. It is presented in the form of a very fine, bright-yellow, odorless powder, insoluble in water. It possesses the valuable property of not caking and it does not adhere to any open surface to which it may be applied. Its claimed lack of odor is not quite correct, but it surely has not the extremely disagreeable and penetrating odor of iodoform. It is one third lighter in weight than iodoform. It can be readily sterilized by bringing it to the temperature of 100° C. (212° F.). It has been used in the treatment of all forms of foul and specific sores, and appears to be of special value when applied to indolent wounds.

Dr. Ernst Kromayer of Halle, Prussia, has apparently been the most extensive user of this article. He has made use of it in over one hundred cases, and he relates the details of three of them. He finds that occasionally it acts as an irritant and has one of the recognized disadvantages of iodoform in the way of producing eczema. However he claims that it is now the most efficient powder for dusting on wounds that has been presented to the surgeon. (*Berl. klin. Wochensch.*, Vol. XXXV, page 217.)

Iodogallicin is a new antiseptic recently brought forward, with a chemical composition closely allied to airol. It is claimed to be bismuth oxy-iodo-methyl-gallol. As will be seen it results from the action of bismuth iodide upon gallic acid. There have been no clinical reports made concerning it as yet.

Iodol (tetra-iodo-pyrrol), the iodoform substitute, has been little heard of during the past year. The one record of prominence is that of Dr. Labit who used a 10 per cent. solution in collodion in the way of an abortive treatment for erysipelas. He thoroughly coated the affected region to an extent of over an inch beyond the immediately affected part. The iodol was rapidly absorbed, for it was found to appear in the urine. Its beneficial action appeared to be usually very prompt, as all the symptoms would disappear within twenty-four hours. He explains the action of this method of application by stating that the collodion seemed to produce sufficient pressure to render considerable aid, in that the penetration of the iodol was promoted. Its application was in no way painful, but on the contrary rather soothing. From his

observations it would show that this affection is rather local, at least at first, and therefore general treatment is not necessarily called for.

Itrol (silver citrate) has received somewhat more attention during the past year than in the year previous. It has been tested in a comparative way with the other silver salts and found to be of sufficient value to be retained as of practical use in certain cases. It is now offered in the form of 100 milligramme ($1\frac{1}{2}$ grain) tablets, in the form of gauze, and in 2 per cent. bougies made with cacao butter. Sutures of various kinds are saturated with it and kept wrapped in several folds of gauze which should be dipped in boiling water for a few minutes just before using, or they may be kept continuously in alcohol, ready for immediate use.

The dentists find a silver-wool very effective, and this salt has been used in that way. Adhesive plaster has been impregnated with it to make a more effective temporary covering for cuts and the like.

Dr. Oscar Werler of Berlin, Germany, has pushed his investigations with this salt during the past year and publishes his results in the form of a paper on "Improvements of Practical Importance in the Technique of Injections in the Treatment of Acute Gonorrhœa with Solutions of *Itrol*." He has now employed this agent for at least a year and a half and he claims that it is increasing in popularity. (*Berl. klin. Wochensch.*, Vol. XXXV, page 358.)

Kreosolid (claimed to be a magnesium compound of the phenols in creosote—kreosote), the new creosote preparation introduced last year, has not been heard of again during the past year. It did not even reach this side of the Atlantic, if a perusal of the current literature of the year can be relied on.

Kryofin, the new antipyretic of last year, closely allied to phenacetin, has received more attention in this country as well as abroad during the past year. Dr. Bresler of Freiburg, Prussia, has published his report on its use in sixteen cases of influenza. He carried on some comparative experiments by using antipyrin and phenacetin in some of the cases. It appears to act rather in the way of preventing a rise of temperature than to reduce an already high temperature, so that the plan Dr. Bresler adopted was to administer a dose of 500 milligrammes (7.7 grains) just before a rise in temperature is looked for. (*Therap. Monatsch.*, Vol. XI, page 551.)

Dr. M. A. Shlenker of Providence, R. I., reports his clinical observations of this agent in a little monograph which he has dis-

tributed. His clinical cases amount to seven, and he concludes as follows:

"From the experience with this drug thus far, it would seem to be a very valuable addition to materia medica. It is obviously prompt, effective in small doses, and safe; in fact, it possesses those qualities most to be desired in a drug of this kind."

Drs. Sidney V. Haas and J. Bennett Morrison of New York city have reported their results of a clinical study of this agent. They make the following statement:

"The conclusions we have drawn from its rather extensive use are as follows: As an antipyretic, while not reducing the temperature so rapidly nor so markedly as the other coal-tar products, it is certainly very efficacious, at the same time being a safer remedy than the other members of the group, and its diaphoretic action being much less marked.

"As an analgetic, it is at least equal to the other members of the group, with the advantage that it is sometimes effectual where the others have failed.

"As a hypnotic, when insomnia is due to causes other than that of severe pain, it is of decided value, and probably superior to the other members of the group." (*N. Y. Med. Journ.*, Vol. LXVII, page 425.)

In the report of their studies they refer to the case of an elderly woman suffering from pulmonary tuberculosis in the last stages, where, after the administration of a moderately large dose, symptoms of collapse occurred. This was a case reported by Dr. E. Schreiber of Göttingen, Prussia, and will be found in the *Deut. Medicin. Wochensch., Therap. Beilage* (Vol. XXIII, page 73).

Dr. John H. Curtis has made a report on this agent, in which he gives detailed notes of ten cases and concludes as follows:

"From the foregoing cases and a review of many others, I conclude that kryofin is: First, a prompt and safe antipyretic, unusually free from unpleasant collateral effects; and second, an analgesic of great power and rapidity of action in all cases of neurotic character.

"Kryofin is easy of administration, being tasteless, and is best given in powdered form, dry, upon the tongue. The tablets are not advisable unless first pulverized. Their effects are not so rapid or sure, probably because of the mixture of acacia necessary for their adhesion and compression." (*Ther. Gaz.*, Vol. XXII, page 303.)

Dr. George Frank Butler of Chicago, Ill., has made a report on

"The Pharmacology and Therapeutics" of this agent in a small monograph distributed to the medical profession, in which he closes as follows:

"In conclusion, I would state that kryofin is purely a symptom medicine, being of no value in removing the cause, but acting only to relieve some symptom of disease—such as pain, pyrexia, etc. The chief benefit of the drug, therefore, is evidently apparent in acute conditions, which, if not complicated, are self-limiting, although pain and pyrexia, whether accompaniments of chronic or acute diseases, usually yield readily to the influence of this remedy.

"Kryofin certainly possesses the advantages of safety, prompt and efficient action, tastelessness, and facility of administration. The drug should claim high rank among analgesics and antipyretics, and, while I have given in this paper only the results of individual experience, there are doubtless many disorders here unmentioned for which the physician may successfully employ kryofin, alike to the great relief of his patients and to his own satisfaction."

Lactophenin (π -lactyl-phenetidin), closely related to phenacetin, continues to be much lauded and, no doubt, universally used, still little has been reported specially in its favor. Dr. L. Hahn of Pyritz, Prussia, has continued to use it for a year and a half with good results. He finds it specially useful when administered to children, for it reduces fever and restlessness without much effect on the pulse and strength. However, he feels called upon to mention additional cases of severe icterus being produced after its use. He now has to put on formal record two cases in addition to his previous fourteen. (*Deut. Medicin. Wochensch., Therap. Beilage*, Vol. XXIV, page 17.)

Dr. Kurt Witthauer of Halle, Prussian Saxony, also reports on four cases of icterus resulting from the use of this agent. He has had very successful results in various cases of neuralgia and where an antipyretic is called for, but has to throw out the caution that care should be taken in its use. All his cases appeared to be the true catarrhal variety of icterus due to obstruction. (*Therap. Monatsch.*, Vol. XII., page 111.)

Dr. Armin Huber of Zurich, Switzerland, reports a case of a woman 53 years old who had suffered from hæmorrhagic nephritis and beginning cirrhosis. She had been taking this agent with very little trouble until one day a prickly heat was noted on her head. Her face became swollen, and she had a chill that evening,

which was followed by a rise in temperature and a severe headache. On the following morning, erythematous patches the size of a silver dollar were noted on the face. The upper lip was swollen considerably and vesicles the size of a bean appeared on the inner surface of the lip. Ulcerations of the same size, which bled freely, were also present. Her tongue was so much swollen that it was difficult to move it, and on one side it was considerably ulcerated. She felt a burning and itching sensation in the vagina, and a small ulcer with œdematous swelling appeared on the vulva. Leucorrhœa was also present. In eight days the above symptoms disappeared and no ill-effects resulted, but the case emphasized the fact that such severe symptoms, although rare, may occur. (*Correspondenzbl. für Schweiz. Aerzt.*, Vol. XXVII, page 742.)

Largin is the name given by Dr. C. Pezzoli of Vienna, Austria, to a new silver compound with albumin, containing 11.2 per cent. of silver, which is larger than any other silver compound, and therefore, it is claimed, is that much more powerful. A solution of 1 to 4,000 destroys all forms of bacteria in ten minutes, and the gonococci in five minutes. It is recommended by Dr. Pezzoli as a new agent in the treatment of gonorrhœa. He finds that it is so free from irritating effects that from 1 to 1½ per cent. solutions may be retained in the urethra for as long as thirty minutes, and thus effect beneficial results. Such injections may be made several times a day. He reports on forty-one cases of acute anterior urethritis of recent origin, in which he used the treatment for an average of thirty days, twenty-seven of which furnished successful results; in eight cases little benefit was noticed. The remaining six were those in which the deep urethra was affected before this agent was employed, and only two of these cases were benefited. He found that although its bactericidal power was greater than the other silver compounds, protargol and argentamin excel it in penetrating power. (*Wien. klin. Wochensch.*, Vol. XI, page 286.)

Dr. Ferdinand Kornfeld of Vienna, Austria, has also employed this agent in twenty-nine cases of gonorrhœa in which he had very marked success. In a part of his cases, however, where the affection had extended to the posterior portion of the urethra and the urinary bladder, the solution of largin produced only a decrease, and not complete destruction, of the gonococci. (*Wien. Medizin. Presse*, Vol. XXXIX, page 1306.)

Loretin (meta-iod-ortho-oxy-chinolin-ana-sulphonic acid), the iodoform substitute, has not been specially alluded to during the past year.

Lycetol (di-methyl-piperazin tartrate), the uric acid solvent, has not been alluded to as often during the past year as the year previous. The most prominent observation is that of "A Report on the Use of Salophen and Lycetol" by Dr. Paul Norwood of Omaha, Neb., in which, in comparison with most of the well-known agents used in the treatment of rheumatoid arthritis, he employed this comparatively new remedy. He found that owing to its agreeable taste and non-irritating properties, it could be administered over a somewhat prolonged period, and therefore he reports much encouragement from his limited use of it. (*Med. Times and Register*, Vol. XXXIV, page 271.)

Lysol (the saponified product of coal-tar, chiefly composed of cresols), the substitute offered for carbolic acid, has received more definite attention, by allusions made to itself individually, than during the year previous. It must not be inferred, however, that there has necessarily been any lapse in the use of this article since its first introduction, for it has had its useful place from the beginning, although undoubtedly it was looked to to accomplish at first what was not promised of it. Its preference as a general disinfectant has been very definitely pointed out in many quarters, chief among which during the past year has been the Illinois State Board of Health. They have taken pains to emphasize the fact that it is much less dangerous as a poison than solutions of either corrosive sublimate or carbolic acid, and that it may be used in preference to either of these.

In a discussion which occurred at the meeting of the Berlin Medical Society on June 8th last, after a paper written by Drs. R. Schaeffer and Paul Cohn on "Asepsis," Dr. Dührssen stated that he had employed for the past six years the following aseptic method of cleansing his hands: He brushes them for five minutes in hot water containing 1 per cent. of lysol. The water is just short of boiling, and is therefore somewhat painful when the hands are first introduced, but this appears to be quite a necessary part of the cleansing. (*Berlin. klin. Wochensch.*, Vol. XXXV, page 603.)

Dr. A. L. Levy makes a report of having used this agent in cases of pityriasis versicolor, including himself, with such favorable results that he would invite others to try it in the same line. He applied the pure lysol once every day for three days, and then the day following washed the whole chest with a solution varying from $\frac{1}{2}$ to 1 per cent.—applying even to parts not affected. The affection entirely disappeared in eight days, without giving any pain or irritation.

Although, as above stated, this agent is comparatively less toxic than some of the other disinfectants, still it has its poison cases recorded against it. One of the most prominent during the past year is that reported by Dr. G. Kluge of Kiel, Prussia. He records it in an article entitled "A Contribution to Lysol-Poisoning." (*Muench. Medicin. Wochensch.*, Vol. XLV, page 889.) He adds this case of his to the thirteen previously recorded. It was the case of a woman 35 years old, and occurred during a relapse in typhoid fever, during which the nurse administered it by mistake. The danger apparently lay in the general symptoms, which consisted of rapid coma and cardiac weakness. The temperature fell rapidly from 39° C. to 36° C. (102.2° F. to 96.8° F.), and the symptoms closely resembled those of poisoning by carbolic acid. The details of the case will be of interest to those who desire to follow up this subject.

Mallein, the tetanus antitoxin analogous to tuberculin, has not been treated upon specially during the past year in the medical literature, but the veterinarians are, naturally, still much interested in it, and from their standpoint they claim that it is becoming more widely appreciated. In March last, Mr. W. E. Taylor, a veterinarian in London, read a paper on "Mallein and Its Uses," before the Central Veterinary Medical Society. It is claimed, by some members of that profession, that it is being more largely used for diagnosing glanders.

Menthol has been written upon very considerably throughout the past year. It appears to be an effective ingredient in so many combinations, that only the most prominent comments, which may be of some little service, can be alluded to here. Dr. Rudolf Reigner of Berlin, Germany, has published the results of his "Comparative Investigations with Regard to the Effectiveness of Certain Gastric and Intestinal Antiseptics." It may be of interest to enumerate here the agents he compared: menthol, thymol, chinosol, chloral hydrate, resorcin, actol, Credé's soluble silver, silver nitrate, steriform, ichthyol, and sodium salicylate. (*Deut. Medicin. Wochensch.*, Vol. XXIV, page 390.)

At a meeting of the Vienna Medical Club, on October 20, last, Dr. F. Müller reported the results of his treatment of chronic hay fever by the use of the following formula:

Menthol	.	.	.	.	3 grammes (46.3 grains)
Resorcin	.	.	.	.	3 " (46.3 ")
Alcohol	.	.	.	.	14 " (216.1 ")

His cases were several patients coming from the United States and England. They were more or less neuropathic, and were subject to gastro-intestinal troubles. As he always believed that there was a close relationship between gastro-intestinal disturbances and hay fever, he at once treated his cases by administering alkaline mineral waters, giving massage and other well-known forms of treatment in that line. In addition, he applied a solution of silver nitrate to the nasal cavities by means of a brush, and irrigated with seven or eight litres of water, after which he applied the above solution.

Dr. R. Kafemann of Königsberg, Prussia, has recommended the following formula as being very efficient in the treatment of laryngitis and bronchial catarrh:

Menthol	4.0 grammes (61.7 grains)
Eucalyptol	2.5 " (38.0 ")
Terpinol	2.0 " (30.9 ")
Pitch pine oil	1.0 " (15.4 ")

A few drops of this mixture is poured into a suitable glass vessel gently warmed over a flame, developing vapors which the patient inhales by any suitable means, but a glass tube ending in a pear-shaped bulb is recommended.

During the past year, a mixture of finely-powdered menthol and common salt, in the proportion of 1 to 10, is recommended to be dusted on varicose ulcers of the leg, with good effect.

Dr. G. Schwersenski of Berlin, Germany, has brought forward a menthol valerianate, for which the name has been coined of "validol." It is claimed to be a chemical combination of menthol and valerianic acid, which appears to form a combination which has far less irritating properties than the menthol alone. By assay, it appears that the free menthol amounts to 30 per cent. It is a clear, thick, colorless liquid, having a mild odor, naturally like menthol. It produces a cooling effect, when applied to the skin. It has been recommended as a local application, and as a carminative and stomachic in ten to fifteen drop doses on a lump of sugar. It has been used locally in tonsillitis and pharyngitis.

Menthoxol is the name given to a combination of a 1 per cent. alcoholic solution of menthol, with a 3 per cent. solution of hydrogen dioxide, and claimed to be a powerful germicide. A 10 per cent. solution of this new compound has been used in the treatment of abscesses and suppurating wounds. The action, when applied to such wounded surfaces, is the same as when a solution

of hydrogen dioxide is applied, that of the evolution of gas forming quite a copious froth. The menthol, apparently, has its good effect in deodorizing. Dr. Wagner, of the Charité hospital of Berlin, Germany, reports that these solutions, undiluted, will kill anthrax spores inside of three hours, which does not occur with the component parts by themselves. Dr. Wagner has records of two hundred surgical cases in which this compound, as well as camphoroxol and naphthoxol, was employed. (*Deut. Medicin. Wochensch.*, *Therap. Beilage*, Vol. XXIII, page 74.)

Methæthyl (methyl-ethyl), the new local anæsthetic of last year which was claimed to have some decided advantages over ethyl chloride, has not been heard of during the current year in the medical literature.

Methyl salicylate (synthetical oil of wintergreen) still continues to be favored, and repeated arguments are made for the use of the synthetical oil in place of the natural product. Mr. Vida lends his testimony to its effect, especially when used in the treatment of rheumatism. He fails to explain how the natural oil is so irritating, whereas the synthetical is comparatively free from this objection. However, it appears to be quite a settled fact. (London *Lancet*, Vol. I for 1898, page 52.)

Molteni reports his conclusions, after its use. In sciatica, his results have always been satisfactory. In chronic articular rheumatism, he claims that it is the best agent known at this time. In acute febrile articular rheumatism, it was of little value in adults, and quite useless in children. The local pain, however, was much diminished by its use. In acute cases of anhrithis of the vertebral column it acted well, but in chronic cases it was of little value. He obtained very gratifying results in sero-fibrinous pleurisy. (*Wein. Medizin Blätter*, Vol. XXI, page 511.)

Dr. Gilbert Lassere reports using this agent internally, combined with sweetened whiskey or rum, to conceal its odor and taste. His success in both acute and subacute cases of rheumatism has been very gratifying. He has made use of it in forty cases. Although he has used it in a few cases of gout, he claims that they are yet too few to make any definite statement, but its usefulness is quite apparent.

Drs. G. Linoissier and M. Lannois made a report, at a meeting of the Paris Academy of Medicine, on March 22, last, of their results after applying this agent locally to the unbroken skin of joints in rheumatic affections. They appear to prove that the action is due to actual absorption, and not to inhalation. They

rarely met with toxic effects, and even when such did occur, they were only slight in character. They advise two applications a day, in acute rheumatism. In infectious and gouty arthritis, and other chronic painful diseases like neuralgia, their results were frequently good, although not universally so. They recommend that, when the agent is applied, the parts should be covered over with india-rubber cloth. They prefer this direct application, rather than the use of any of the ordinary excipients, as they find the absorption is rather retarded by the use of such means. In concluding their treatment of the subject, they append quite a complete list of references in the form of a bibliography. (*Bulletin de l'Académie de Médecine*, Vol. XXXIX, page 320.)

Dr. Chambard-Hénon of Lyons, France, reported to the French Congress of Medicine at Montpellier, France, his results with the external application of this agent in cases of hepatic colic. He urged early application, to obtain the best results. The quantity employed each day may range from 6 to 7 grammes (92.6 to 108 grains) without bad effects. He also recommends that the part, after the application is made, be covered with rubber tissue. As early as half an hour afterward, some relief may be expected, and within an hour it is quite marked. His first results were so gratifying, that he proposes to push this line of treatment further, and, if possible, substitute the older forms of treatment only when he fails with this local application.

Reports are made of its application to the vagina and cervix in cases of metritis or gonorrhœa, with the result that the gonococci are destroyed.

"A rare instance of poisoning from oil of gaultheria occurred during the past week (October 15 to 22) in Bellevue Hospital, the first in the history of the institution, it is said. The drug was taken by the patient as a cure for drunkenness. The quantity consumed was not definitely made out, it being, according to the man's statement before he became unconscious, ten cents' worth. Some years ago there occurred in the wintergreen-distilling region of Pennsylvania a similar death, in which an insurance company raised the question of intent on the part of the insured. It was shown, however, that in the process of production a watery fluid was obtained which the workmen drank with impunity, but the oil was considered dangerous and the supposition was that a mistake had been made in the two liquids, making the suicide non-intentional." (*N. Y. Med. Record*, Vol. 54, page 594.)

Methylene Blue (tetra-methyl-thionine chloride), the anilin derivative, has been quite largely commented upon during the past year. It appears to be now pretty prominently recognized by most practitioners. The Monograph of Dr. Jean P. Cardamatis of Athens, Greece, on the treatment of malaria with this agent alluded to here last year, has been published in the *Deut. Medicin. Wochensch.* (Vol. XXIV, Therap. Beilage, page 9), and it may therefore be alluded to a little more in detail at this time. He reports on 275 cases of its administration. The dose for adults varied from 650 to 800 milligrammes (about 10 to 12.4 grains). In his cases of typical intermittent fever he began administration ten hours before the paroxysm. In remittent or continuous fevers, eight hours before the remission. A combination of quinine and this agent was often found of value when either one of the two failed. Out of his 275 cases he found only 30 needing the combination. He found the advantages of this agent were especially noted in cases where quinine was of little use or where an intolerance of it was met. The staining of the tongue and lips and a mild attack of cystitis were occasionally observed, which were the only inconveniences of any weight, and he claims that they are so insignificant in comparison with the good results obtained, that they may be quite ignored. A striking feature of treatment with this agent, is that although the convalescents continue to reside in the malarial district, very few are again attacked. In 18 cases the fever disappeared after the first day, in 36 after the third day, in 84 after the sixth day, in 88 after the tenth day, in 18 after the eleventh day and in 13 after the twelfth day. No cure was obtained in 18 cases. In 38 cases a relapse occurred after two months.

Dr. G. Richard D'Aulnay reports on its use both internally and by injection, in various affections of the urinary organs, and enumerates its special properties as follows: It is useful in epithelial nephritis by increasing diuresis and causing the albumin to entirely disappear. In cystitis, both internal administration and that by injection of a diluted aqueous solution resulted in marked benefit. It is an excellent germicide and analgesic, and prevents fermentation. (*Bulletin Gén. de Thérap.*, Vol. CXXXIII, page 353.)

Dr. J. Castaigne has made quite a study of the subject of renal permeability, and has found that this agent approaches the ideal of permeable substances, therefore to those who may be interested in this line of study, it may be of service to record here that his

conclusions may be found in the *Gaz. des Hôpitaux* (Vol. 71, page 617).

Dr. H. A. Tomlinson of St. Peter, Minn., read a paper before the Minnesota Valley Medical Association on December 7th last, on the effect of this agent on the kidneys, and after alluding to the work of Drs. Archard and Castaigne, reports on his own six cases in which he found that methylene blue stained the functional part of the kidney but not the fibrous part. He regrets that he was not able to verify the selective affinity of this agent for the epithelial structure of the kidney by post-mortem examination, but it has been strongly recommended in the treatment of cancer, cystitis, gonorrhœa, and the like. He concludes that it showed special affinity for the functional parts. He feels constrained to report that with one or possibly two exceptions the patients have not been much benefited and that in the two cases in which improvement was quite marked, the nephritis was either parenchymatous or mixed. He is rather inclined to conclude from not only these six cases but others, that the parenchymatous cases are more apt to show improvement. The general condition of the patients, however, in all cases showed marked improvement (*Northwestern Lancet*, Vol. XVIII, page 61.)

Dr. Orville Horwitz of Philadelphia, Pa., read a paper before the Philadelphia County Medical Society on February 9th last, on the special effect of methylene blue in the treatment of 105 cases of acute gonorrhœa, giving special reference to its germ-destroying action on the gonococcus. He reports that he found the best results were obtained by combining copaiba, sandalwood, and salol, administered in capsules according to the following formula:

Methylene blue	.	.	130 milligrammes (2 grains)
Oil of sandalwood	.	.	195 " (3 ")
Oleoresin of copaiba	.	.	195 " (3 ")
Oil of cinnamon	.	.	1 drop

"When this combination was administered, the purulent discharge, together with all inflammatory symptoms, usually disappeared within four or five days."

He feels warranted in making the following conclusions:

"(1) That methylene blue is a germicide of great value in cases of acute urethritis, due to the presence of gonococci.

"(2) That it will not abort the disease, but will materially shorten its duration.

"(3) That it markedly lessens the tendency to complications.

"(4) That it is not to be employed in the treatment of acute urethritis, unless a bacteriologic examination demonstrates the existence of gonococci.

"(5) That the remedy should be employed as soon after the infection as possible.

"(6) That the proper dose with which to begin treatment is one grain three times daily, to be increased to two grains if the remedy is well borne.

"(7) That the beneficial action of methylene blue is enhanced and the duration of the disease is shortened by combining it with copaiba, sandalwood, and salol.

"(8) That the injections of potassium permanganate by means of a hard syringe, or if possible by irrigation, administered in the early stages of the disease, and followed during the period of decline by an astringent injection, have a marked tendency to lessen the duration of the malady.

"(9) That methylene blue always has the effect of turning the urine to a deep blue color. Of this fact the patient should always be informed to prevent unnecessary alarm.

"(10) That methylene blue is of no service in cases of non-specific urethritis.

"Irrigation of the urethra with methylene blue in cases of acute gonorrhœa is now being made the subject of investigation by the writer, but as yet he has not elaborated sufficient data to enable him to submit the result of his research to the profession." (*The Phila. Polyclinic*, Vol. VII, page 113.)

Dr. Estay has made a report (*La Médecine Moderne*, Vol. IX, page 53) on two cases of diabetes mellitus treated by him with benefit with this agent. The first case was a fifty-three year old man who continued to pass 2500 cc. of urine each day, containing 60 grammes of sugar for each litre. Dr. Estay administered one-half gramme (7.7 grains) of methylene blue each day. In 8 days after beginning the treatment the sugar had diminished one third, and at the end of five weeks had almost disappeared. The amount of urine had been reduced to 1500 cc. and the prevailing thirst had gradually diminished. In his second case he was enabled to reduce the excretion of sugar from 30 grammes for each litre, down to 5 grammes at the close of one month. In this case 0.1 gramme (1.5 grain) of this agent was given four times each day.

Dr. Alfred Fröhlich of Professor Nothnagel's Vienna clinic re-

ports on a test for glucose in urine by means of this agent. The results of his demonstration will be found in the *Centralblatt für Innere Medicin* (Vol. XIX, page 89).

Naphthalan is the name given to a proprietary article made by dissolving from $2\frac{1}{2}$ to 4 per cent. of anhydrous soap in purified petroleum naphtha. It is presented in the form of a thick, blackish-green jelly, which melts at 70° C. (158° F.) It is claimed to be obtained from a petroleum spring of the name adopted for it which exists in the Caucasus. It is reported to be quite miscible with vaseline and like excipients. It is quite soluble in the ordinary solvents except water, in which it is insoluble. Air seems to act upon it, therefore the caution is expressed that it should be kept in well-corked bottles. By some observers it is classed as an analgesic, antiphlogistic, antiseptic, and reducing agent. It is claimed to have no toxic effects and is readily absorbed through the skin.

Nothing has been heard from it in this country, but clinical reports come from Europe of its being an efficient agent in arthritis and rheumatism by local application. It has been chiefly used in the treatment of eczema, psoriasis, ringworm, scabies, and other parasitic affections. The only thing apparently to be strictly observed, is that it should not be rubbed into the skin too violently, as such is apt to produce the so-called "tar-acne." Dr. Pezzoli has used it clinically in forty-two cases of eczema in all stages with much promise. In fifteen cases of impetigo contagiosa he obtained excellent results. In cases of scabies only three applications were found necessary to obtain satisfactory results.

Dr. Friedrich Rosenbaum of Tiflis, Russia, reports on its marked efficiency in most all inflammatory processes in which he includes certain skin affections. He details three cases of local gangrene which were treated by this agent in the form of a powder, and noted its marked deodorizing effects almost immediately. He alludes in his report to an ulcerative process called "ulcus tropicum," which he states is prevalent among the inhabitants of Russia beyond the Caspian sea. He states the microbic origin of this affection has been definitely established, but heretofore no treatment has been satisfactory. Now, when using this agent in one case after others had failed, he finds that the annoying itching disappeared at once and complete healing occurred in fourteen days, although the regular course of the disease is generally one year. Of course this one case does not necessarily establish its general efficiency, but it encourages one to carry on the observations fur-

ther. He reports also an obstinate case of psoriasis of the scalp in which local treatment with this agent in the form of an ointment responded almost at once. He expresses satisfaction with his results in the treatment of frost bite of the extremities. He explains that it produces hyperæmia and prevents the threatening gangrene. In cases of burns it acts as an anodyne. (*Deut. Medicin. Wochensch.*, Vol. XXIV, *Therap. Beilage*, page 28.)

Naphtalin (naphthalene), one of the hydrocarbons obtained from coal-tar, has been little commented upon specially during the past year, although it is still much used.

Naphtol (β -naphtol), still much used, although not much commented upon, is quite a valuable intestinal disinfectant. It is being used in Europe, particularly in cases of pyloric obstruction, tuberculous ulceration of the bowels, and typhoid fever. Also, it is being used still as a very energetic germicide externally in the form of a 20 per cent. ointment in the treatment of itch and ringworm. It has been substituted with good effect for tar in the treatment of psoriasis, eczema, and other skin affections. Some observers have thrown out the caution that it is not entirely free from toxic properties when used in large quantities. Fatal inflammation of the kidney has resulted in some cases reported.

It is thought of sufficient value to be worthy of official recognition, and therefore it is one of the few new articles added to the British Pharmacopœia just issued.

Napthoxol is the name given to a mixture of a 2 per cent. alcoholic solution of naphthol and a 3 per cent. solution of hydrogen dioxide. It is recommended as a powerful germicide in the treatment of wounds. It is spoken of in connection with menthoxol and camphoroxol, and the claim is made that any one of these three solutions undiluted will kill anthrax spores within three hours, which could not result with the ingredients separately. Dr. Wagner of the Charité Hospital of Berlin, Germany, reports its use in two hundred surgical cases by applying a 10 per cent. solution on sterilized gauze. It has no irritating properties, is an efficient deodorizer, and has an agreeable odor. (*Deut. Medicin. Wochensch.*, Vol. XXIII, *Therap. Beilage*, page 74.)

Nosophen (tetra-iodo-phenol-phthalein), the iodoform substitute, is still before the profession and is being used to quite a large extent. However, preference over iodoform is not given to it in most cases. In general, it is recommended equally with iodoform, showing that the surgeon is undoubtedly anxious to favor any-

thing which has any advantage over iodoform, and yet not willing to give the latter up entirely.

Orexin (phenyl-di-hydro-quin-azoline), the appetite promoter and stomachic, continues to be used, and the hydrochlorate has been practically retired for reasons previously given. Pharmacists are now offering a chocolate tablet of this agent which seems to be an attractive form to administer it.

Dr. Friedrich Kölbl reports having had favorable results in the treatment of chlorosis and anæmia, in anorexia existing among convalescent patients after a very severe illness. Again, in cases of nervous dyspepsia, hysteria, and neurasthenia. His results were very gratifying, also, in relieving the vomiting in pregnancy after a few days' administration. He finds it to be contraindicated in quite all cases of acute inflammation and ulcerations of the mucous membrane, as well as in all cases of hyperacidity and hypersecretion of gastric juice. The favorable time to administer this agent he finds to be about one hour before dinner and supper, and warm liquids should rather be avoided immediately after its administration. His cases of chlorosis were nine in number, his convalescent patients four, and his neurasthenics four. He gave 500 milligrammes (7.7 grains) in the form of a wafer to nine healthy persons, from which he noted very definite beneficial effects and no ill effects.

The tannate of this agent has now been brought forward with some advantages claimed for it. It is a yellowish-white, odorless, and almost tasteless powder, quite like calomel in general appearance, soluble in water and insoluble in dilute hydrochloric acid, and therefore would probably be of service in the stomach, stimulating the acid secretion. It has been employed in cases of pulmonary tuberculosis, anæmia, and chlorosis in the same class of cases as basic orexin. It has behaved well in the treatment of anorexia in children, particularly accompanying an attack of diphtheria, and in some quarters has gained quite a reputation from this one particular class of patients. It appears to be most valuable in the functional affections of the stomach, rather than the organic ones.

Dr. Ferdinand Steiner of Vienna, Austria, has now made a report on the use of orexin tannate in over one hundred cases of anorexia of various kinds in children. He reports that with very few exceptions the children who refused to eat before, even after some force was brought to bear upon them, seemed to long for

their food after the administration of this tannate. On an average it took five days' consecutive use to bring about this result, but when once established, the appetite seemed to continue for quite a length of time. For children between the ages of three and twelve years his rule was to give 500 milligrammes (7.7 grains) two hours before dinner and supper. (*Wien. Medicin. Blätter*, Vol. XX, page 767.)

Orphol (β -naphthol bismuth), recommended as an intestinal antiseptic, has not been alluded to under its own head during the past year, but as was stated on a previous occasion, as its effects are those of β -naphthol, it no doubt is classed under that one general head.

Orthoform (methyl ester of π -amido-*m*-oxy-benzoic acid), the new synthetic local anæsthetic constituted like cocaine, has received much attention during the past year. It has evidently come to stay. Its comparative freedom from poisonous effects gives it a long lead over cocaine. Its hydrochlorate has been found to be too acid to use hyperdermically or as an application to the eye. Its internal administration, however, both by the mouth and in urethral injections, is quite effective. *Orthoform* itself is insoluble in water, but after violent shaking in water it is divided up into such small particles that they can be injected hypodermically with a somewhat large needle. The pain attending the passage into the tissues has been counteracted by a preliminary injection of a small quantity of cocaine. Dr. Hirschbruch of Posen, Prussia, has made a report on its hypodermic use as an anæsthetic for minor surgical operations. His general plan is to first inject under the thick part of the skin the equivalent of one division of his hypodermic syringe of a 2 per cent. solution of cocaine hydrochlorate (representing 2 milligrammes [$\frac{1}{36}$ grain] of the salt). A small bleb results from such a puncture, into which, at several points, he injects under the subcutaneous tissue 1 cc. (16.2 minims) of distilled water containing in suspension 3 per cent. of *orthoform*, taking the precaution to shake the syringe well before each injection, in order to distribute the small particles uniformly throughout the water. A very few minutes only is required to produce a complete and lasting local anæsthesia. (*La Semaine Méd.*, Vol. XVII, page 476.)

Dr. Isidor Dreyfus of Ottweiler, Prussia, reports on the use of this agent to counteract the burning sensation experienced at the seat of an operation when Schleich's method of local anæsthesia by infiltration is employed. He accomplishes this result by dusting

the orthoform on at that locality. (*Muench. Medicin. Wochensch.*, Vol. XLV, page 527.)

Dr. Kallenberger of Munich, Bavaria, reports upon his use of this agent in his surgical practice. He observes that it acts well as a local anæsthetic whenever sensory nerve filaments are exposed; it is non-toxic to such an extent that he reports having used as much as 4 grammes (about 60 grains) in the course of one week upon a large raw surface; it is quite antiseptic in its action. He has employed it in fresh wounds, in burns, in ulcers of the leg, in carcinomatous ulcers, in syphilitic ulcers, and in toothache where the nerve ends were exposed. In from three to five minutes the local anæsthesia was complete, and lasted, in his experience, on an average of thirty-five hours. He employed this agent in the form of an ointment to the best effect when an exudation was abundant, for the usual powder form would be washed away. He speaks of others having used a chloride of this agent for internal administration, but expresses the opinion that it would not do for surgical purposes, on account of its irritating properties. (*Berlin. klin. Wochensch.*, Vol. XXXV., page 261.)

Dr. Eugene S. Yonge read a paper before the Manchester (England) Therapeutical Society on "The Local Treatment of Painful Ulcerations by Orthoform, with Special Reference to the Upper Air Passages," in which he enumerates his treatment of eighteen cases, and concludes as follows:

"Finally, if further observations confirm the results already published, it would appear that orthoform is entitled to take a position in the gamut of local anæsthetics applicable to the upper air passages. It seems probable that it will replace—by virtue of its insolubility and innocuousness—its relative, cocaine, when long anæsthesia on ulcerated surfaces is wished for; be replaced by the more reputed drug when short insensibility of intact mucous membrane is desirable, and on occasion supplement it." (*Brit. Med. Journ.*, Vol. I for 1898, page 362.)

Dr. R. Blondel of France has reported to the Paris Academy of Medicine his results after various applications of this agent in gynecology, especially where he desired to produce local anæsthesia on the uterus in the treatment of endometritis and in curetting. One series of his cases consisted of fifty patients who were treated successfully for endometritis in an average period of three weeks. He used in these cases orthoform suspended in the glycerin employed to saturate his antiseptic gauze, which was introduced into the uterine cavity. In cases where curetting was called for, he packed

the uterine cavity with orthoform gauze an hour before he was to operate, which made the subsequent operation painless.

Dr. Max Mosse of Berlin, Germany, reports on his six months' experience with this agent in a paper on the behavior of orthoform in the organism. His object was to determine whether it was excreted in the same form in which it was administered. The reactions obtained in the urine were the same as in the original article before administering, but orthoform itself cannot be separated from the urine. Thus some closely allied product must be excreted. (*Deut. Medicin. Wochensch.*, Vol. XXIV, page 405.)

Dr. H. Neumeyer of Munich, Bavaria, reports his results after its use in painful affections of the upper air passages, such as tuberculous ulcerations of the larynx; in minor operations where it is used as a local anæsthetic; in simple or malignant gastric ulcerations where pain exists; in cases of pain occurring throughout the urethral tract; in painful skin affections, and in neuralgias occurring in tabes and the like. He has found that even one application often counteracted the pain for hours and even days. He has observed that it must be applied directly to the ends of the nerve filaments to produce its beneficial results. In neuralgias generally it had little effect. He observed that cocaine excels orthoform when applied to the mucous membrane of the air passages where the latter was intact, but when ulcerated and the nerve ends were free, orthoform was far superior and lasting effects were produced. He noticed that a slight burning sensation, locally, occurred occasionally, but lasted a very short time. He observed that the sense of touch, of heat and cold, and of taste are not affected by this agent. (*Muench. Med. Wochensch.*, Vol. XLIV, page 1230.)

Paraldehyde (officinal) although much in use, has not been noted specially in the medical literature of the year.

Pellotin (the alkaloidal principal contained in the species of Mexican cactus known botanically as *Anhalonium Williamsii*), the new hypnotic of last year, has not been heard of in the current medical literature of the year.

Peronin (hydrochlorate of the benzylic ether of morphine), proposed as a substitute for morphine, is still before the medical profession, and used in the same class of cases as alluded to here last year. Dr. M. Eberson of Tarnów, Austria, reports his results in five cases of acute bronchial catarrh, three cases of chronic bronchial catarrh, five cases of pulmonary tuberculosis, and three cases of pertussis. As a sedative, his results were quite favorable. His adult dose varied from 10 to 20 milligrammes ($\frac{1}{6}$ to $\frac{1}{3}$ of a

grain), four times a day, taken either in syrup, as a powder, in tablets, or in cachets. Some of these means, as well as others he recommends, should surely be adopted to mask the bitter taste, and the burning sensations in the throat should be prevented. He found that the appetite, the general circulation, and general condition of the patients were not affected. Its action was such that, without hindering the expulsion of the expectoration, it lessened the amount considerably, and proves to be in his hands a most valuable substitute for morphine. Its action in acute bronchitis was rapidly effective. The irritation of coughing, the expectoration, and the sleep in chronic bronchitis and pulmonary tuberculosis were markedly improved. The digestion was unaffected, and it proves to be non-toxic, even after long use. He feels called upon, however, to make one exception concerning its toxic effect, in the case of a child two years old who exhibited drowsiness. In one particular case of hysterical cough, and three of pertussis, his results were extremely gratifying. (*Therap. Monatsh.*, Vol. XI, page 591.)

Dr. A. Mayor delivered an address before the Société Méd. de Genève on May 4, last, giving the results of his investigations. He used it clinically as a substitute for codein, in doses varying from 20 to 40 milligrammes ($\frac{1}{3}$ to $\frac{2}{3}$ of a grain) two or three times each day to alleviate the cough in pulmonary tuberculosis, chronic bronchitis, and pertussis. He also finds that it does not produce sweating nor dyspepsia. His conclusions are that its action approaches closely that of codein, even more so than any other alkaloid, and based on experiments upon rabbits it has only a slight narcotic action. Even when the dose is increased, it does not produce a narcosis, but convulsions, which he claims are not spinal in origin as those of strychnine, but are cerebro-bulbar in origin, and produce death by asphyxia. The dose to produce this appears to be four times less than in the case of codein. After artificial respiration has been kept up, death results from heart stoppage, which proves it to be a cardiac poison. He thinks it very worthy of note that such a feebly narcotic alkaloid should allay a cough almost as effectually as morphine. (*Revue Méd. de la Suisse Rom.*, Vol. XVIII, page 315.)

Dr. Meltzer has published his conclusions in relation to this agent as follows, practically confirming previous observers: In doses varying from 40 to 100 milligrammes ($\frac{2}{3}$ to $1\frac{1}{2}$ grains) it acts like morphine, but has none of the unpleasant sequelæ. He places its hypnotic action relatively between that of morphine on the one

hand, and such hypnotics as paraldehyde, amylene hydrate, sulphonal, trional, and the like on the other. He finds only two prominent disadvantages, and they are its difficulty solubility and disagreeable taste. To overcome the first, he suggests the following mixture:

Peronin	.	.	.	.	.	.	2.0 grammes.
Saccharin	.	.	.	.	.	.	0.5 “
Rectified spirit	.	.	.	.	.	.	100.0 “
Water	.	.	.	.	.	.	900.0 “

He cautions all to observe that the above is a mixture, and not a solution, and that the bottle must be shaken before each dose is taken.

Pharmacopœias, as standards for the medical as well as the pharmaceutical profession, have received much more attention in the current professional literature than in the year previous, chiefly for the reason that one of the standard works of the world—the British Pharmacopœia—has recently been published, the work having been finally completed after much study and investigation. An attempt was made in this revision to give it an imperial character in which every colony and dependency would have a voice in the work accomplished. The complete results are not what many of the colonies had expected, but possibly as much has been done in that line as could be, taking everything into consideration, for it is proposed to issue in about two years an appendix giving a few alternative formulæ in certain preparations, which may be made in the colonies.

The new work is undoubtedly a great improvement, both from a medical and pharmaceutical standpoint, over the previous revisions. The pharmacists have had a larger representation in the work done than ever before. One hundred or more experts have had something to do with the work as it was divided up so systematically that each group of workers could work independently and turn in their results to be harmonized by the general body.

A defect which might have been avoided is the question of the date of its enforcement. It has previously been the rule that when an advertisement appeared in the *London Gazette* stating that the new revision had been published, the date of that issue was the date of enforcement and the use of the new work became compulsory. It is now proposed, however, to allow a few months to elapse before its enforcement in order that a thorough study may be made of the changes, and not only physicians and pharmacists,

but manufacturers adjust themselves to the new conditions. The limit of such interim has not yet been announced. It proves to be a much more indispensable guide both to the practitioner and the student in medicine, than the United States Pharmacopœia, chiefly by having incorporated in it a few features which make it more of a reference book for them. The metric system has been used for the first time in the formulæ and placed alongside of their old standard weights, but it will be noted that the metric weights and measures are not the equivalents of the Imperial ones, and in carrying out the formulæ according to the two systems very different quantities of the preparation are produced. It is unfortunate that the doses are only expressed in apothecaries' weights, for physicians will now have little chance to become accustomed to the metric system as they do rarely consult the formulæ for any practical purpose.

A marked improvement has been made in the way of simplifying the dose question. The methods of preparation of the various articles have been so modified as to enable numerous classes of preparations to be given in doses based on some definite plan. All tinctures, for instance, taken as a whole, can be given in either large or small doses. All preparations possessing active properties would naturally be of the small dose class and likely to produce poisonous effects, therefore it is so arranged that this class all have quite uniform doses. For instance tincture of digitalis and tincture of strophanthus—alternate in their action—are by this new revision given in the same dose. The class of preparations which are given in large doses are grouped together in a similar way. The plan which was adopted by the revisers of our present United States Pharmacopœia of so relaxing the requirements of the mode of manufacture by a prescribed formula, has been adopted by the revisers of the British Standard, so that a particular process is quite optional. The quality of the finished product must, however, always come up to a fixed high standard, and there has been no relaxation of the standard of purity.

The principal of standardization has been used to a greater extent, but not as fully as was expected by many when the revision was first undertaken, for the reason that it was found quite impracticable to make it anywhere near general in its application. To those who only view the question quite superficially it would seem that standardization was the only proper plan to follow out completely, but when it is remembered that the amount of alkaloidal principles are not uniformly in direct and con-

stant ratio to their therapeutic activity, it becomes evident that the application of such a principle cannot be made general, for the reason that medical knowledge does not keep pace with chemical.

Among the additions acknowledged now in this revision are a class of preparations called concentrated vegetable liquors ("Liquores Concentrati") for which it is hard to realize the practical reason. They seem to be something like a cross between the tinctures and fluid extracts and evidently aim to represent concentrated infusions, so-called.

Another prominent addition is the recognition of the thyroid extract. A "Thyroid Solution" has been introduced also and is described as "a liquid prepared from the fresh and healthy thyroid gland of the sheep." The characters of this solution are described as follows: "A pinkish turbid liquid, entirely free from any odor of putrescence. It must be freshly prepared, and kept in well-stoppered, sterilized bottles. 100 minims (or 6 cubic centimetres) represent one entire thyroid gland." The dose is from 308 to 924 milligrammes (5 to 15 minims).

The revision of the German Pharmacopœia is now in progress, for the Committee on Revision has already met in session and is undoubtedly at work.

A supplement to the 1893 edition of the Danish Pharmacopœia—the last edition—was published early this year and contains formulæ of some of the newer synthetic products.

A new Venezuelan Pharmacopœia was issued during the first half of this year. The Spanish language is still unemployed, but the synonyms are given in Latin. Many of the newer synthetic products are included in its pages.

In preparation for the approaching revision of the United States Pharmacopœia in 1900 much work is being done every day. The hold-over Revision Committee, which is in existence, is hard at work, and will be ready to render valuable service when the publication is to be taken up. Many valuable points can be learned now from the latest revision of the British Pharmacopœia.

Phenacetin (para-acet-phenetidin) continues to be the same widely-used antipyretic and analgesic of previous years, and calls for little special comment.

Phenocoll (amido-para-acet-phenetidin), the antipyretic, used practically always now in the form of hydrochlorate, is still employed quite largely. It is used almost exclusively in the treat-

ment of malaria. Italy seems to be a field in which noted success is obtained.

In Algiers the government has undertaken to investigate its efficiency in the treatment of intermittent fever as found in the hospitals there. Cases which have not responded to quinine are found to act favorably with this agent, and often where its anti-periodic effect seems lacking, its action as an anodyne is beneficial.

A few cases of dangerous collapse have been reported from the French army after using this agent. (*La Semaine Méd.*, Vol. XVII, Annexes, page 214.)

Dr. V. Dall'Olio reports his conclusions upon the use of this agent as follows: He finds it to be an excellent antipyretic, analgesic, and antirheumatic agent; it gives excellent results in long-standing cases of malarial fever which have not responded to quinine; it reduces the size of the spleen in malarial affections; it has given him good results in chorea, in pertussis, and in various forms of febrile affections; he finds it unobjectionable to most children as well as adults, especially when the taste is masked by the addition of syrups or other expedients. (*Gaz. hebdom. de Méd. et de Chirurg.*, Vol. XLV, page 175.)

Phesin (the analogous antipyretic to *cosaprin*) has not been heard of in the current medical literature of the past year.

Piperazin (di-ethylene-di-amine) has been little commented upon during the past year. The most prominent mention was that of Dr. Reynold W. Wilcox of New York city, who spoke of it in his paper on "A Phase of the Treatment of Goutiness" (*Medical News*, Vol. LXXI, page 684). He relates three of his cases in which he obtained very satisfactory results from the use of piperazin water, and concludes as follows:

"So far as my knowledge goes piperazin water is the method of choice for the administration of this drug, because perfect solution in proper dose and quantity of menstruum is obtained.

"It may then be concluded: (1) That uric acid, as a causative factor in neurotic lithemia, a form of goutiness, should not be overlooked. (2) That a limited meat diet is productive of good results. (3) That piperazin administered in the form described in this paper is the remedy of choice for the elimination of uric acid, not only in this, but in other pathologic conditions dependent upon the same cause."

Poison Ivy. Dr. A. T. Hudson of Stockton, Cal., writes to the *New York Medical Record* (Vol. LIV, page 173) on "An Antidote to the Rhus Poison" as follows:

"In the *Medical Record* for April 16, 1898, is an article on 'Rhus Toxicodendron,' by Dr. Louis F. Frank, of Milwaukee, Wis. The author speaks of many remedies, but gives no preference to any. This probably is no oversight, for I find such is the general tone of authors on the same subject.

"A few years ago my son put a Chinaman to clearing a piece of ground which was infested with a thick growth of poison oak, *rhus diversiloba*, which had to be handled and burned. After one day's work the Chinaman reported sick, with hands and face swollen and painful. Remedies from the nearest doctor were obtained and applied. A carpenter who was working about the place was afflicted also. His eyes were closed and very painful. The medicine at hand was used on both patients for several days, with no relief. My son then sent to me, a hundred miles distant, for treatment. I ordered muriate of ammonium, one ounce, to be dissolved in two quarts of warm water. This solution was to be applied with cloth or absorbent cotton, covered with oil silk or rubber tissue. Relief followed quickly and in two days the sufferers were well or able to work.

"Ten days later my son, after working a day with the shrub, found at night that his hands were swelling and inflamed. He applied the remedy at once, and by the next morning there was positive arrest of the malady. By frequent washing with the solution he and the others were not troubled thereafter.

"Dermatitis venenata is usually self-limited, although the limit may be twenty-four hours, or as many days; hence the long list of uncertain remedies. Any medicine which will relieve pain and arrest morbid progress promptly is a remedy much needed.

"The above cases and a history of many others might be cited to show that this drug, hydrochlorate of ammonium, is a pleasant and efficient curative and prophylactic."

Protargol is the name given to a new silver compound, consisting of 8.3 per cent. of silver combined with protein, and prepared in that unlimited storehouse of new products, Prussia. It is presented in the form of a light-yellow powder, quite readily soluble in water, which solubility is found to be furthered by first slightly sprinkling the powder before the bulk of the water is added. It makes a comparatively clear, light-brown solution, and may be prepared up to 50 per cent. This solution is neutral, and does not decompose when heated. It, however, turns a dark brown, if the heat be continued for any length of time. If concentrated hydrochloric acid be added to the solution, it produces a precipitate of

protargol itself, and not of silver chloride, as would be the case in the ordinary silver salts. This property is of much value in its physiological action. The combination between the silver and protein is so close, and forms such a stable combination of silver, that practically no irritation results when it is used as an antiseptic. It acts, also, as a very effective bactericide, and by some is claimed to be superior to its allies, argonin and argentamin. Its better results are explained in that it contains a larger proportion of silver, for the argonin contains only 4.2 per cent., and the argentamin only 6.3 per cent. It has been used with good results in as dilute solutions as one quarter of 1 per cent. in the treatment of acute gonorrhœa. The strength has been rapidly increased up to from 1 to 1½ per cent. with good effect. Even 5 to 10 per cent. solutions have been used in the treatment of urethritis in females, and little irritation was experienced. In general, the results were found to be better and more prompt with this agent than with any other used for the same purpose. Prof. A. Neisser of Breslau, Prussia, reports that he has never used a remedy which gave him better results. He used it in 150 cases in his surgical practice, as a dressing on wounds. In cases of phlegmonous inflammation, a 5 per cent. solution as a moistening liquid on the dressing proved very efficacious. The powder was used in all recent wounds. An ointment was used in quite a series of ulcerations, and a 5 per cent. solution was applied in the treatment of tonsilitis.

In "A Contribution to the Treatment of Gonorrhœa," Dr. Hermann Goldenberg puts the matter very compactly as follows: "We are indebted to Neisser for the introduction of the nitrate of silver for this purpose, which for a long time has been a favorite means for the destruction of the gonococcus. As the effect of this drug is only superficial, owing to its forming insoluble combinations with albuminous substances, and as the gonococcus penetrates at an early period into the deeper layers of the epithelium—and even into the connective tissue—the physician has long been desirous of obtaining a silver compound which would not form insoluble, and consequently inert, albuminates.

"Recognizing this want, synthetic chemists have endeavored to prepare silver compounds which would be free from this disadvantage, such as argentamin and argonin. Although it must be conceded that these preparations exhibit a more penetrating effect than nitrate of silver, and must be regarded as valuable acquisitions, I have, during the past few months, become familiar with a new silver salt, which has proved even more effective. This

remedy, known as protargol, is a light yellow powder, readily soluble in water, containing 8.3 per cent. silver in firm combination with a highly diffusible proteid base. Its solutions, which are clear and of neutral reaction, are not precipitated by alkalies, albumin, or acids, and hence its effect is not interfered with or impaired by the presence of these substances. It is advisable to preserve the solutions in dark bottles. Owing to its chemical constitution, its combination with a highly diffusible base, there is reason to believe, *a priori*, that it exerts a more penetrating effect than any other compound yet brought before the profession." He goes on to state, later, that he intends "to try gelatin urethral bougies of protargol as soon as I can have them made in the proper manner." These he obtained later, and no doubt is working with them at this time. He closes his article as follows: "In conclusion, I can but confirm the statement of Neisser that no other remedy gives such uniformly good, reliable, and quick results as have been witnessed from the use of protargol." (*N. Y. Med. Jour.*, Vol. LXVII, page 119.)

Mr. J. Ernest Lane of London, England, in writing up the subject of protargol as noted in the "Abstracts on Venereal Diseases," in the *London Practitioner* (Vol. LX, page 310), expresses himself as follows: "The experience of the writer, though at present limited, on the use of protargol, goes far to confirm the favorable opinion expressed by Neisser, especially with reference to its powerful antibactericidal properties."

Dr. E. Wood Ruggles writes from Berlin to the editor of the *Medical News* expressing his desire "to make the medical profession acquainted with the results attending the use of protargol in gonorrhœa in the polyclinic of Drs. E. Frank and A. Lewin at Berlin." Those desirous of completing their reading on this new agent will be interested, therefore, to read the report of Dr. Ruggles, as found in the *Medical News* (Vol. LXXII, page 404).

Dr. Gustav Behrend has published a "Preliminary Report Upon the Action of Protargol in the Treatment of Gonorrhœa" (*Berlin. klin. Wochens.*, Vol. XXXV, page 304), in which he disagrees with Prof. A. Neissier, for his experience would show that it was not the best bactericidal agent. He differs, also, with Dr. E. Frank, who claimed that he found the urethra free from gonococci in from one to three days. Dr. Behrend's cases number fourteen, and show results at variance with the professed authorities. He found the gonococci in the discharges from the urethra in from three to five weeks after he began the treatment. In one

case, he is obliged to report very decided inflammatory reaction occurring after injections had been made. His experience rather sides with the use of astringents as being equally effective, but he does not intend to give up the new treatment just yet. His argument is, that the protargol only acts upon the gonococci which it comes in contact with, as it does not penetrate the tissues. Those gonococci, therefore, unattacked by this agent, are permitted to remain and increase. Dr. Behrend's claims, however, are met by very pronounced refutations from more than one observer, basing their conclusions upon many months' use, and quite a series of cases.

Dr. L. Fürst, of Berlin, Germany, reports that he has had excellent results in 36 cases of gonorrhœa; 14 of these were of the neck and body of the uterus, 8 of the cervix, 5 of gonorrhœal urethrocystitis, 3 affecting the vulva, 3 of inflammation affecting Bartholin's gland, 2 of gonorrhœal endometritis, and 1 affecting the vagina alone. He uses a $\frac{1}{2}$ per cent. solution in irrigating the uterus, for instance, and gradually increases the strength up to 2 per cent. He follows this by inserting a soluble bougie of protargol containing from 5 to 10 per cent. into the cervix, and after it has done its work he irrigates the vagina with a 10 per cent. solution, following the whole up by inserting a glycerin tampon containing 10 per cent. of protargol. After the second week of this treatment he applies astringents, which finish the treatment completely in three weeks. He has also had excellent results in the treatment of gonorrhœal ophthalmia with this agent.

Dr. Ed. Pergens, of Brussels, Belgium, has made a report on his use of this agent, with which he is much pleased. He expresses surprise at the claim of some that a solution of this agent does not stain linen, for he finds it does. He has employed solutions varying from 2 to 10 per cent., and occasionally he has used a 20 per cent. solution followed by no pain or irritation. In cases of acute conjunctivitis he dropped the solution in the eye from three to twelve times a day, and in cases where suppuration of the lachrymal sac occurred he found good results to follow a syringing out with a 10 per cent. solution. His results were not so good in the chronic forms of conjunctivitis with hyperplasia. (*Klin. Monatsh. für Augenheil.*, Vol. XXXVI, page 129.)

Other observers in this line of practice have obtained as satisfactory results. They note that whereas it may be less energetic than silver nitrate, it does not cause any irritation or smarting and is a safe solution to leave in the patient's hands for application at home.

Dr. A. Darier recommends an ointment as the best form in which to apply this agent externally, in the following proportions:

Protargol	1.5 grammes (23.2 grains)
Zinc oxide	1.0 " (15.4 ")
Starch	1.0 " (15.4 ")
Vaseline	15.0 " (231.5 ")

This he would apply to the eyelids in cases of blepharitis and blepharo-conjunctivitis. (*Wien. klin. Rundschau*, Vol. XII, page 97.)

Dr. Deneffe, of Brussels, Belgium, has reported to the Belgium Royal Academy of Medicine the results of his practice in the use of this agent in ophthalmology. He not only acknowledges that it is fully as effective as silver nitrate, but in some ways superior to it. He finds it to be surely a more effective bactericide and has far greater penetrating power. (*Bull. de l'Académie Royale de Médecine de Belgique*, Vol. XII, page 190.)

Dr. Frederick E. Cheney, of Boston, Mass., has published a paper on "Protargol as a Substitute for Nitrate of Silver in Ophthalmia Neonatorum and other Conjunctival Diseases" (*Boston Med. and Surg. Journ.*, Vol. CXXXIX, page 194) as a result of his observations on 25 cases of the first affection and several cases of gonorrhœal and non-specific conjunctivitis.

Pyoktanin (methyl-violet), the analin dye "pus destroyer," continues to be little commented upon although undoubtedly much in use. It has been recently suggested that it has a valuable application as quite an accurate means of diagnosing posterior urethritis. The plan adopted is to wash out the urethra thoroughly with about a 1 per cent. solution of boric acid, then inject a solution of pyoktanin of about $\frac{1}{4}$ to 1 per cent. strength, directing the patient to retain it for about five minutes, after which the urethra is washed out as before, until the solution passes without color. The patient is then directed to pass whatever water there may be in the bladder, and the color of the filaments passed is noted. If they are violet in color, it would indicate that they have come from the anterior part of the canal; if colorless, from the posterior part. The practical objection to the plan has appeared to be the inability of the patient to retain the solution for as long as five minutes.

Dr. Alfons Hanč, of Vienna, Austria, has made successful use of injections of this agent in malignant growths of the bladder which he could not operate upon for various reasons. The strength

of his solution to begin with was 1 in 5,000, and it was increased slowly. (*Allegemein. Wien. Medizin. Zeitung*, Vol. XLIII, page 163.)

Dr. R. E. Graham, of New York city, has written an article on "The Use of Pyoktanin in the Treatment of Cystitis" (*N. Y. Medical Journal*, Vol. LXVII, page 889), in which he enumerates four cases. He claims that it can be applied to the most delicate mucous membrane, not only in concentrated solution but in powdered form, with but slight, if any, irritation.

"As a germicide and antiseptic pyoktanin stands high in the list. It destroys the vitality of anthrax bacilli in solutions of 1 to 1,000, and retards the development of pus cocci in solutions of 1 to 2,000,000. Pyoktanin, when applied to an inflamed mucous membrane, stains the same intensely blue; this color remains for a number of days, and, of course, the pyoktanin is active as an antiseptic as long as any color remains."

Pyramidon (di-methyl-amido-antipyrin), one of the new substitutes of last year for antipyrin, has been followed up during the past year with some success. A report comes from the clinic of Dr. R. von Linbeck of Vienna, Austria, where it has been tried in 100 cases of various diseases, and the results appear to confirm previous ones. In 32 cases out of 40 of chronic tuberculosis its antipyretic effect was extremely satisfactory. In nine cases of articular rheumatism it has quite displaced the use of salicylic acid where the latter cannot be tolerated. Its effect seemed to be specific in rheumatism when given in fractional doses throughout the day amounting in all to a total of 1.5 grammes (23.2 grains). In migraine, trigeminous neuralgia, and like nervous pains its analgesic effect was very marked, and it is strongly recommended to extend its use in this line. In chronic rheumatism it seems to be of little value and absolutely of no value in malaria and nervous tachycardia. In two cases of tuberculous patients there was distinct intolerance. (*Wien. klin. Wochensh.*, Vol. X, page 964.)

Dr. Arnold Brandeis of Prague, Bohemia, makes a report of his results in eight cases of typhoid fever in which he used this agent. He reports it to be a much slower and milder antipyretic than antipyrin although its effects are more lasting. He has had some unpleasant symptoms among his cases, such as profuse perspiration, a weak pulse and even collapse, with doses varying from 100 to 225 milligrammes ($1\frac{1}{2}$ to $3\frac{1}{2}$ grains). (*Prager Medicin. Wochensh.*, Vol. XXII, page 525.)

Dr. Rudolf Laudenheimer of Leipzig, Germany, reports the

results of his experiments with this agent in over 100 cases of disturbance of the nervous system in doses of 650 to 975 milligrammes (10 to 15 grains). He has promptly relieved headaches occurring during convalescence from various nervous affections. The results were complete in from one to two hours. In headaches resulting from alcoholism, which were difficult to relieve, good results were also obtained and the effects of the drug would last almost ten hours. He had excellent results in relieving the headache in three cases of cerebral tumor, but the initial dose required was 1.5 grammes (23.2 grains) three times daily. The dose was afterwards reduced to a total of 390 milligrammes (6 grains) each day. He observed no toxic symptoms in any of his cases. (*Therap. Monatsh.*, Vol. XII, page 177.)

Dr. C. Horneffer of Berlin, Germany, has made use of this agent in 45 cases of pulmonary tuberculosis as well as in pneumonia and typhoid fever and expresses himself as well satisfied, for he finds there are no ill-effects even though he may keep up the treatment for months. He observed little effect, however, in various forms of ischia, but his results were very gratifying in trigeminus neuralgia and in headaches; in the latter cases he accomplished his results with one dose. (*Therap. Wochensch.*, Vol. IV, page 1052.)

Dr. Eduard Feuerstein of Vienna, Austria, claims to prevent fever completely in pulmonary tuberculosis by the use of 600 milligrammes ($9\frac{1}{2}$ grains) given in divided doses throughout an hour. He claims to have verified the observations of others as to its harmlessness, but can not verify the results of others when they claim good results in rheumatism. His results were obtained from observing some 59 cases. Forty-nine were of pulmonary tuberculosis in all stages of consolidation. (*Centralbl. für die gesammte Therapie*, Vol. XV, page 586.)

Pyrogallol (pyrogallic acid), although not at all new, has been more frequently commented upon during the past year than in the previous one. Dr. Veiel of Cannstadt, Germany, has published the results of his considerable experience with this acid. He has used it in the treatment of tuberculous processes in many cases, and he finds it preferable to any surgical treatment. He claims that the only disadvantage he finds in its comparative use surgically, is the length of time required. He first destroys the diseased tissues with a ten per cent. vaseline ointment by spreading it upon lint and applying it for from three to five days. Healing sets in almost immediately and the following applications are reduced in strength from $\frac{1}{2}$ to 2 per cent., under which the healing

progresses to completion. He had found that this weak per cent. is sufficient to destroy all lupus tissue and does not retard granulation. (*Archiv. für Dermatologie und Syphilis*, Vol. XLIV, page 353.)

Dr. L. Leistikow of Hamburg, Germany, recommends this agent in place of chrysarobin in the treatment of ungeal favus, and claims to obtain no secondary troubles as in the case with the latter agent. His plan of treatment is to apply the following spray upon the nail:

Pyrogallol	1.0 gramme (15.4 grains)
Ether	100.0 grammes (3½ ounces)
Yellow wax	0.2 gramme (3½ grains)

Afterwards applying the following mixture:

Pyrogallol	1.5 grammes (23.2 grains)
Naphthol	2.0 “ (30.9 “)
Ammoniated mercury	1.0 “ (15.4 “)
Tinct. of guaiac	30.0 “ (463 “)

An oxidized form of pyrogallol has been known for some years, but the new name of “pyraloxin” has recently been coined for it. Dr. P. J. Unna of Hamburg, Germany, has repeatedly recommended it in various skin affections.

The mono-acetate of pyrogallol has been given the name of “eugallol” and has been experimented with by Dr. Kromayer of Halle, Prussia, in the treatment of psoriasis and like affections with good results. It appears in the form of a nearly translucent brownish-yellow syrup, readily soluble in water and acetone, and is usually offered diluted with 33 per cent. of the latter. The triacetate has been given the name of “lenigallol.” This comes in the form of a colorless powder, soluble in water, but decomposed by alkalies. It is claimed to be non-toxic. It has been used in the form of a 50 per cent. lanolin ointment with some success. The di-salicylate has been given the name of “saligallol.” This is offered in the form of a resin-like body which is dissolved in either two parts of acetone or 15 parts of chloroform, which forms a varnish-like liquid. It is presented for use in the form of a 66 per cent. solution in acetone and is used like the syrup “eugallol.”

Resorcin (officinal) is still a prominent agent before the profession. Its use has been continued in the treatment of hay fever. Dr. F. Müller stated before the Vienna Medical Club, at its meeting on October 20th last, that he had several patients with chronic

hay fever accompanying gastro-intestinal troubles in which this agent was effective. He emphasized the fact that this affection is closely related to gastro-intestinal disturbances, and therefore he makes a part of his treatment the drinking of alkaline mineral waters and a course of massage. He also applies a silver nitrate solution to the nasal cavities and irrigates liberally with water. Then he applies with a brush the following solution:

Resorcin	.	.	.	.	3 grammes (46.3 grains)
Menthol	.	.	.	.	3 " (46.3 ")
Alcohol	.	.	.	.	14 " (216.1 ")

This agent has been used effectually as a local anæsthetic in cases of stomatitis of the lips which has followed a rash. The plan of treatment is to wash the mouth out well with lime water, and then apply a 1 to 6 aqueous solution of resorcin with a brush. A burning sensation is felt for a short period, but the pain is found to be much reduced after this sensation has passed off. When the water has evaporated, it leaves the resorcin as a white powder on the lips, which is allowed to remain there. This treatment was persisted in from five to six times a day, and usually the pain completely disappeared after the fourth application. The exudation ceases after two days, when desquamation takes place. Resorcin was found in the urine in a few hours after its administration.

In relation to the "Untoward Results after Administering Resorcin," a correspondent writes to the editors of the *London Lancet* as follows:

"SIRS: Recently I was called in consultation with another medical man to see a child, and we prescribed resorcin in 2-grain doses. The mother states that a quarter of an hour after the powder had been administered the child's mouth became inflamed and the tongue was swollen. When I saw the child the following morning, blisters had been formed on the lips similar to what would have been produced by boiling water, and in addition to a thick white coating on the tongue, there was a distinct excoriation outside the mouth. On making inquiries, we found the drug dispensed had been exposed to light and presented the appearance of decomposition having taken place, and it occurs to us that carbolic acid or other irritant may have been produced. The chemist, we have reason to believe, has suggested to the parents that the injury was due to the drug having been administered without a vehicle. We have never known or heard of severe results of the kind being produced by pure resorcin, and we think that in the present instance

decomposition or the substitution of another drug may have had much to answer for. Perhaps I ought to have mentioned that the child was suffering from cholera infantum. I enclose some of the powders, and we will feel obliged for your opinion.

"I am, Sirs, yours faithfully,

"L. C.

"Sept. 5, 1898." (London *Lancet*, Vol. II for 1898, page 779.)

Which is followed up two weeks later by another correspondent, who writes the following:

"SIRS: I am not at all astonished at the experience of your correspondent, 'L. C.' Resorcin is an escharotic of considerable power, acting chiefly on epithelium, and therefore on mucous membranes. I have on several occasions employed it for destroying the granulations of rodent ulcer and epithelioma in cases where operation was refused or contraindicated. Resorcin is very soluble in water, 1 in 1, and it is not therefore surprising that, if placed in the unpowdered state, undiluted, on the delicate mucous membrane of an infant's mouth, it should produce caustic or vesicant effects. I should be very much astonished if it did not. The drug for internal administration should be diluted with some inert powder or given in some suitable vehicle. No doubt an adult might take it in the powdered state by swallowing it with a draught of some liquid without injury, but that is a very different thing from placing it on an infant's tongue, where it immediately forms a highly-concentrated and active solution. With regard to the discoloration of the specimen referred to, this would either not affect its action at all or make it slightly less active. If your correspondent and his colleague had ordered 2 grains of pure carbolic acid instead of resorcin, and the former had turned a pink color as it does on exposure to the light, they might just as well attribute the caustic action that would follow to this discoloration as in the case referred to.

"I am, Sirs, yours faithfully,

"PHARMACOLOGIST.

"Sept. 20, 1898." (London *Lancet*, Vol. II for 1898, page 836.)

Experimenters have evidently been striving after a soluble form of resorcin, and it is claimed that one has been produced with the following composition, di-resorcin-hexa-methylen-tetramin, and has been given the name of "polyformin." It comes in the form of small, colorless crystals, which are soluble in cold water and alcohol.

Roentgen Rays (X-Rays). For the want of a better name this department of scientific investigation has now been given the name of radiography, and less prominence has been given it in the literature for the reason that the novelty of the subject has quite passed off. Although this may be the case, the scientific interest in the subject is not only not diminished, but is on the increase. Little that is new has been discovered concerning the X-Rays for some time past, but much improvement has been made in the various styles of apparatus and the more convenient application. One of the most prominent workers in this line has been Prof. John Trowbridge of Cambridge, Mass., who has been working with his assistant, Mr. John E. Burbank, in the Jefferson Physical Laboratory of Harvard University. A short account of his recent investigations has been published under the head of "The Source of the X-rays." His experiments "were conducted with Crookes tubes containing no interval between the anode and the cathode; and no discharge therefore in the usual sense occurred in the tubes. A continuous conductor was led through the rarified tube, and it was discovered that the X-rays were given off from every element of this conductor at right angles to its surface when a disruptive discharge occurred in the circuit of which the tube formed a part. This remarkable result was obtained by means of the very high electromotive force obtained by a Planté rheostatic machine which was charged by ten thousand storage cells." . . . "The most interesting results obtained with this form of tube was the production of the so-called X-ray burn by means of the brush discharge from its bulb. When the back of the hand was exposed to this brush discharge, which assumed a peculiar forked nature in the dark room, a peculiar prickling sensation was experienced and all the symptoms of the well-known X-ray burn developed. The skin when examined under a microscope exhibited an appearance similar to that shown by the photographic plate. There were centers of inflammation surrounded by regions of lesser degrees of burn. It seems evident that the so-called X-ray burn is due to an electrification—a discharge at the surface of the skin—and this electrification may or may not be accompanied by the X-rays." . . . "In order to test the question whether the so-called cathode rays and X-rays are generated primarily only at the cathode, a very large resistance of distilled water was interposed in the circuit with the continuous wire tube in order to damp any oscillations which might arise. The circuit thus consisted of the tube, the water resistance, a spark gap and the secondary coil of a large

Ruhmkorf. The tube was connected at first permanently to the air pump. As the exhaustion proceeded a beam of rays proceeded from the mirror on the continuous conductor which was focused on the wall of the tube. This beam was more brilliant and produced a stonger fluorescence on the tube when the wire was negative than when it was positive. At a higher stage of the vacuum, however, very little if any difference could be detected in the appearance of the tube, and X-rays could be detected outside the tube opposite the fluorescent spot caused by the mirror. That is, the X-rays were given off both when the wire constituted the cathode of the circuit and also the anode. It seems therefore that the term cathode rays is not a general one. It would seem that electric rays might be a more comprehensive one for both cathode rays and X-rays.

“Furthermore the phenomenon of electrostatic induction plays an important part in the phenomena of the so-called X-rays.” . . . “The behavior of aluminum toward the X-rays is so remarkable that it merits especial investigation. Can it be that it manifests a remarkable condenser action toward the high electromotive forces which produce the X-rays, similar to the action which has been observed at lower voltages? We connected to the air pump, at the same time, two exactly similar tubes, one of which had two pointed terminals of platinum, the other two pointed terminals also; but one consisted of aluminum, and the other of platinum. The discharge from a Ruhmkorf coil was sent through these tubes which were in multiple circuit. At a certain stage of the exhaustion it was seen that the discharge passed more easily when the aluminum wire was made a cathode than when it constituted the anode. When the wire terminals in both tubes were made of thin discs, the difference was less marked. This might have been surmised, from previous investigations on the effect of form of electrodes on resulting polarization. It may be that the anomalous action of aluminum in respect to X-rays is due to a species of dielectric polarization on the surface of the platinum and that thus the surface becomes a new source of electrostatic stress, similar to that which was observed by connecting a bit of tin-foil and a capacity to the tube.” . . . He finally draws the following conclusions:

“1. A Crookes tube enclosing a continuous conductor is well suited, with the employment of high electromotive force, for the study of electric lines of induction.

“2. The direction of the so-called X-rays and cathode rays can be changed by electric induction.

"3. The so-called X-ray burn can be produced by an intense state of electrification.

"4. The so-called cathode rays and X-rays are given off from every element of a continuous conductor at a high stage of the vacuum in a Crookes tube, both when this conductor constitutes the cathode and when it forms the anode of the electrical circuit. The term electric rays, possibly rays of polarization, would appear to be more comprehensive than the terms cathode rays and X-rays." (*The Amer. Journ. of Science*, Vol. V [Fourth Series], page 129.)

Dr. W. S. Hedley of Mansfield street, London, W., has written a short article under the title of "Radiostereoscopy," and introduces the subject as follows:

"The progress of radiography seems to open up a field of usefulness for the long-neglected stereoscope. If it be realized that, upon the radiographic film or the fluorescent screen there are thrown upon one flat surface, as in a transparency, the shadows of a variety of objects, which latter in reality occupy in space very different planes, and if further it be borne in mind that such light and shade as the radiograph presents are nothing more than indications of relative opacity to the X-rays, it is evident that such a picture can only very imperfectly display the true relationship of objects, and must entirely fail to give any adequate idea of the contours of their surfaces. In the case of foreign bodies, an exact localization can of course be secured; that is to say, the radiographer is able to give the exact position of the foreign body, with reference to certain artificial surface marks; but such information cannot convey to the mind as sight does a clear conception of the various objects that go to make up the picture. Yet this is what is chiefly wanted. Any method, therefore, must be acceptable which will enable the surgeon to see with his own eyes at one glance, and at any time during an operation, the *tout ensemble* of the region he is dealing with. It appears to me that the stereoscope is able to accomplish this.

"To obtain a stereoscopic effect, it need scarcely be said that the first requirement is true binocular vision on the part of the observer. The second indispensable condition is that there be two corresponding pictures of an object, the one seen from the point of view of the right eye, and the other from the point of view of the left eye. It is evident that in the case of the radiograph these can be secured, either by moving the object itself, or by laterally displacing in a direction parallel to the plane of the sensitive plate

the source from which proceed the X-rays. In dealing with the living body, the latter is the simpler process. But the vital point to ascertain is, what ought to be the proper extent of this displacement, and what are the physical and physiological considerations upon which the extent of this displacement must be made to depend? In other words, given a certain distance of the positive electrode from the object to be radiographed and the thickness of the object itself, what is the proper lateral displacement of the focus tube? Or, given a certain displacement of the tube, and a certain thickness of the object, what is the proper distance of the anode from the object to be radiographed? I have experimented on a purely empirical basis with the ordinary lenticular stereoscope, and have at times obtained effects which were fairly correct. More often the relief is exaggerated, or otherwise untrue."

Then follow some technical terms and forms which are, probably, only of interest to those who would desire to go into the subject more in detail. (London *Lancet*, Vol. I for 1898, page 639.)

The botanists have been studying the action of the rays on germination. It is found that the seeds of some plants germinate more rapidly when exposed for a few hours each day to the action of the rays. They claim to have eliminated the electrical influence by using a sheet of aluminum which had been connected to the earth in the way of a screen between the lamp and the seeds. They found that the temperature, as determined by a delicate galvanometer attached to thermo-electric needles, did not rise perceptibly, even though the exposure lasted for two hours. Therefore, they conclude that the influence on the germination must be entirely due to the rays.

The action upon plant life in general also has been investigated, and it appears to be settled, at least by some observers, that the action of these rays is quite identical with that of light itself. When branches of the plant *Elodea Canadensis* were immersed in water charged with carbon dioxide gas and exposed to the rays, bubbles were evolved exactly as occurs by exposure to sunlight. Likewise, the absorption of oxygen by the plant *Mycoderma aceti* was retarded by a similar exposure. The observation has been verified by more than one observer, that the *bacillus anthracis* is destroyed by exposure to these rays exactly as to sunlight, but to a slightly less degree. It now seems to be quite necessary to prolong the exposure to produce the above results, for it is claimed that the failure to produce them previously was due to the short time of exposure.

Many professional observers are working, undoubtedly, with this interesting and valuable means of obtaining an insight into the animal body, and, although as above stated, little has been accomplished which can be called new, in the general treatment of the subject, still, in the special application to medicine and surgery, much has been written; therefore, it would be quite impracticable to do more here than give some of the prominent illustrative applications of interest to the profession which have come forward during the past year. In the simple process of injecting into the cadaver, much improvement has been accomplished in regard to obtaining satisfactory pictures of the arterial system. Various salts have been used, and the plan of injecting with plaster of Paris or wax has been quite displaced by the use of other material. One of the most recent articles used is mercury, which gives a very excellent picture when exposed to the rays. It is now proposed to use such in illustrating the text-books to replace the usual rough sketches and drawings.

Of the value of the X-rays as a means of diagnosis, there is now but little doubt, and even the courts are beginning to realize that it is a trustworthy form of evidence. It has become quite the routine practice among surgeons, nowadays, to make use of these rays in cases of fracture and dislocation, in which there exists any degree of doubt.

Dr. C. L. Leonard of Philadelphia, Pa., read a paper on the value of these rays as a means of surgical diagnosis before the Atlantic County Medical Society at Atlantic City, N. J., on December 10, last. (*Univ. Med. Mag.*, Vol. X, page 412.) He opens his remarks as follows:

“The advantages prophesied for surgical diagnosis from Röntgen’s discovery, have in a great measure been realized. No greater proof of the value of this method can be found than the rapidity with which it has been adopted as a routine method by the most conscientious and skilful surgeons of to-day. The exact knowledge and the confirmation of diagnosis that it gives has made it an essential in surgical practice, and those desiring the best results for their patients demand in every case this additional means of acquiring a knowledge of the true condition.”

He relates his experience in this line, and includes in his paper six very satisfactory pictures of fractures and injuries.

Dr. Carl Beck of New York city reports his observations with the use of these rays in diagnosing arteriosclerosis, which may be of interest to those who would desire to make a trial in that line.

(*N. Y. Med. Jour.*, Vol. LXVII, page 109.) He also read a paper before a meeting of the German Poliklinik on October 29, last, in which he gave his observations with them in Colles' Fracture. His paper is illustrated, and he relates three cases, and concludes as follows:

"Nothing may inculpate or exculpate a surgeon more than a good skiagram. In the May issue of the *International Medical Magazine* I published an illustration which showed an enormous amount of callous; it prevented pronation as well as supination so much that the case was pronounced to be one of vicious union. It was only the skiagram that exonerated the attending surgeon."

Mr. C. T. Dent, surgeon to St. George's Hospital, London, England, has written an article (*The Practitioner*, Vol. LX, page 123) on the value of these rays in surgical cases, which is well illustrated, and calls attention to the already inevitable reaction which is stated in regard to their use, particularly for the reason that their practical application is naturally much exaggerated when applied to medicine and surgery.

Dr. Ernest A. Codman of Boston, Mass., has carried on a series of experiments on the application of these rays to the study of anatomy, and has published his results. (*Journal of Experimental Medicine*, Vol. III, page 383.) Several excellent photographic plates accompany his paper. He alludes to the distortion of the pictures, and particularly to the fact that the parts, if kept at a distance from the plate, have their shadows magnified:

"Curiously enough, this distortion can be very nearly corrected by the use of the stereoscope. Two skiagraphs may be taken of an object which, when placed in the stereoscope, will give one picture of that object which will have the appearance of solidity. To take stereoscope pictures, two exposures are made with the plate and object in exactly the same relation to each other, but with the light in a slightly altered position in relation to both. This should be done by moving the tube to the right or left a distance corresponding to the normal space between the eyes, or a little less after taking the first skiagraph in the usual position. At the same time a new plate is substituted for the old one, care being taken to put it in exactly the same place.

"In the stereoscopic pictures the skiagraphs were reduced to small 'transparencies,' and printed so as to make the bones and arteries appear white, for greater effect. . . . In such skiagraphs as those of a hand, we seem to look at either the palmar view or the dorsal; that is, the palmar arch will appear in front or

behind the bone, according as the one or the other of the prints occupies the right-hand space.

"Now since the parts of the object farthest from the plate are enlarged, the best arrangement will be that which in the stereoscope will make us seem to look at the enlarged or near side of the object. The enlargement will then be that which would naturally exist on the retina in looking at the object from the side away from the plate. Thus the distortion is in part corrected. The criticism of these pictures, however, may justly be made that the parts of the object which show the clearest and with most detail are those which appear farthest off in the stereoscope. This, of course, is contrary to the simple optical effect. It is, however, not noticeable except in stereoscopic pictures of deep objects."

Dr. J. William White of Philadelphia, Pa., read a paper before the American Surgical Association, a year ago, on "The Surgical Application of These Rays," which now appears in print in the *Amer. Journ. of the Medical Sciences* (Vol. CXV, page 1), in which he has formulated, "tentatively and as concisely as possible, the present state of our knowledge as to the surgical applications of skiagraphy, with the hope that my conclusions may be corrected or supplemented by the experience of other members." Some quite satisfactory plates accompany his paper. He closes by stating that he intends to continue his experiments, which, no doubt, will be published later.

A portable X-ray apparatus has been offered by Dr. Reginald A. Fessenden of Pennsylvania, for surgical use in the field. Its weight is about twenty-five pounds, and is operated by a little gas engine of about the same weight. This is claimed to accomplish all that is practically called for in an emergency in the field. A report of its actual use is awaited with interest.

In the British army, also, a similar apparatus is being used, both in India and elsewhere. Such an apparatus was made use of by the German Red Cross Society in the late war between Turkey and Greece. Dr. H. Küttner of Tübingen, Germany, surgeon in that society, has published an account of his diagnostic results obtained at the front of the Turkish lines. He claims that it helped him not only in localizing the seat of projectiles, but also in the estimate and treatment of injuries to the nervous system. He was able to differentiate between a severe paralysis caused by a contusion of the spinal cord by a splinter or by a rifle bullet, and also whether it would be advisable to undertake an operation of the central nervous system with any degree of success. Not only

has the surgeon been able to locate bullets in the cranial bones, but one case of sarcoma of the brain was localized by means of these rays. A picture was taken after death, and showed a tumor in the form of a comparatively dark but fairly well-defined area, and the localization was fully confirmed by the autopsy. This led to further experiments on dead subjects in the way of localizing various kinds of gross brain lesions. The observations are yet incomplete, but promise is made of the publication of the results obtained. The hope is expressed, however, that cerebral tumors may be localized when of sufficient size not to conflict with other interior parts. Previous observations in this line have not thrown out much hope of the possibility of favorable results, and some observers have written their opinions adverse to much prospect of success, but further investigations will be awaited with interest.

Dr. Robert Müllerheim of Berlin, Germany, has carried on a series of investigations in relation to the use of these rays in obstetrics, not only during the stage of pregnancy but under other conditions. He claims that the various forms and degrees of pelvic deformity, such as rachitis, osteomalacia and spondylolisthesis may easily be detected and the proper treatment begun early to remedy the defects as far as possible in case of a pregnancy that may follow. The distance also between the posterior superior iliac spines, the breadth of the sacrum and other pelvic measurements can be accurately determined by the skiagraphs obtained. The presentation of the fetus may also be determined as well as the size of the approaching head and the dimensions of the pelvis. He illustrated his article to good effect. (*Deut. Medicin. Wochens.*, Vol. XXIV, page 619.)

Drs. I. Boas and M. Levy-Dorn of Berlin, Germany, have studied these rays in a diagnostic way in the gastro-intestinal tract for the purpose of detecting not only new growths but to discover changes in the position of the stomach. They also have made observations of much value on cases of narrowing of the pylorus and intestinal stenosis. To this end they would administer gelatin capsules containing a substance like bismuth which was impervious to the Röntgen rays. These capsules would be coated with celluloid to prevent their being digested. Their position then throughout the alimentary tract could be determined by the use of the fluoroscope. In order to detect the capsules when they had been excreted they were stained with an inert anilin dye. His observations covered fourteen cases. Peristaltic action was followed quite closely, as well as the excursion of the stomach during

inspiration and expiration. Of course the location of the capsule could only be determined relatively in relation to the abdomen, and could not be referred necessarily to any particular section of the intestine. They apparently watched with much interest to note the passage of the capsule through the pylorus into the intestine, but unfortunately did not succeed. In cases of growth around the pyloric end of the stomach they have observed the capsule remain in the fundus of the stomach for quite four or five days. This was quite a diagnostic point, showing evidences of trouble at that locality. Where no stenosis of the tract was present they would find the capsule evacuated in from two to six days. (*Deut. Medicin. Wochensch.*, Vol. XXIV, page 18.)

Drs. Arnozan and J. Bergonié of Bordeaux, France, have reported what they claim to be a new use of these rays, in the determination of the direction and form of fistulous tracts. Their observation was made upon a young girl with a plural fistula caused by an empyema previously operated upon. The fluoroscope detected the form and direction of the tract. A hollow sound through which a thin thread of metallic lead was passed, was introduced into the fistula in order that the picture in the fluoroscope might be evident. Antiseptic precautions were taken. (*Journ. de Méd. de Bordeaux*, Vol. XXVII, page 547.)

Dr. Francis Pott of Bournemouth, England, read a paper before his local medical society on November 10th last "Concerning the Action of X-Rays on Cultivations of Tubercle Bacillus" in which he states that his detailed experiments were undertaken with a view of ascertaining whether X-rays inhibit the growth of or kill the tubercle bacillus, and closes by stating that—

"These experiments point to the conclusion that X-rays do not affect the tubercle bacillus, and lead us to believe that the improved condition of tuberculous patients who have been submitted to the influence of X-rays was due to causes other than the action of the rays." (London *Lancet*, Vol. II for 1897, page 1314.)

Dr. Hermann Rieder of Munich, Bavaria, has worked along in the same line and contributes the results of his experiments in a paper entitled "A Further Contribution Concerning the Effects of Röntgen Rays on Bacteria, as well as upon the Human Skin." He alludes to the negative results obtained by previous investigators, and then proceeds to describe the apparatus he uses, with the result that his experiments rather indicate that the growth of the tubercle bacillus could be influenced by the rays, and feels encouraged to push further in his investigations not only upon animals

but upon the human subject. (*Munch. Medicin. Wochensch.*, Vol. XLV, page 773.)

Mr. Mackenzie Davidson has described in detail an apparatus for exact measurement and localization by means of these rays in the *British Medical Journal* for January 1st, 1898 (Vol. 1 for 1898, page 10), and again brought it forward at a meeting of the Ophthalmological Society of the United Kingdom on January 27th last, when the subject of the localization of foreign bodies in the eye and orbit was under discussion. This may be of interest to those who care to follow up the subject. (*Brit. Med. Journ.*, Vol. I for 1898, page 372.)

Dr. A. G. Thomson of Philadelphia, Pa., read a paper at the fourth annual meeting of the American Academy of Railway Surgeons held in Chicago on "The Effect of X-Rays in Ophthalmology" in which he makes the following statement:

"Ophthalmology is undoubtedly indebted to the X-ray, as it has added another accurate method in diagnosis of the injuries complicated by presence of foreign bodies.

As regards the deleterious effects of the X-ray, they are small in comparison to the great benefits derived. I have seen several instances of the hair falling out and slight dermatitis, but this is always due to the fact of the vacuum running down and the rays not penetrating, and to long exposures. I have never seen any serious damage to the eye."

Then follows a demonstration of the method adopted. The discussion which followed the reading of the paper will be interesting to those who are working in that line. (*Journ. Amer. Med. Asso.*, Vol. XXX, page 1087.)

Dr. Francis H. Williams of Boston, Mass., has taken up the medical side of the use of these rays and read a paper before the N. Y. State Medical Society on January 25th last, in which he concludes as follows:

"In making a diagnosis, physicians will find that although much that the X-ray reveals can be recognized by other means, it would often be an advantage to have this information confirmed by another method, and we must also appreciate that it can extend our knowledge into a field which was previously beyond our reach. A diagnosis may be made by an X-ray examination alone in certain cases, as in aneurism, emphysema, and pneumothorax, and in a few cases by it alone, but as a rule it is only one method and should be used in connection with others. The fluoroscope and stethoscope, for instance, supplement each other. X-ray examinations,

in suitable cases, give earlier evidence of disease than the older methods. I daily find them indispensable in making a complete examination of patients who may have a disease of the chest, and can by them determine in some cases the presence of an abnormal condition, or more fortunately its absence, or sometimes completely change the diagnosis which had been previously made.

The X-ray is still too recent a discovery to have reached the limit of its usefulness, and its application in medicine deserves and will repay careful study." (*Medical News*, Vol. LXXII, page 609.)

Dr. L. Derville of Lille, France, has written a paper on the "Accidents Caused by the Röntgen Rays." (*Journ. de Soc. Méd. de Lille*, Vol. XXI, page 300.)

The *Philadelphia Medical Journal* (Vol. I, page 705) makes the following pertinent remarks on the errors possible in the use of these rays in diagnosis:

"Even those surgeons who are familiar with the appearances of fractures and other lesions through the fluoroscope, or as seen in skiagraphs, are liable to be deceived. Skiagraphy must be used as microscopy is used, in connection with clinical observation and experience. In other words, it is necessary to know anatomy and surgery in order to fully appreciate the findings disclosed by the use of Röntgen Rays. This is only a repetition of what experience has taught the profession in the mutual service which clinical medicine and pathologic histology render each other. The pathologist who knows nothing of the clinical side of medical science is probably as dangerous to the patient as the practising physician who knows nothing of pathologic histology. A diagnosis founded on the microscope alone is just as likely to be erroneous as one founded on clinical examination without the aid of the microscope.

"Attention is called to the danger of relying too absolutely upon the appearances in skiagraphs because of a recent article in a medical journal published in an important medical center of the United States. A professor of surgery in one of the medical schools of that city makes the unexpected statement that in forty-four cases of fracture of the lower end of the radius which were skiagraphed, nineteen showed that 'a distinct transverse fissure above the capitulum ulnæ existed, without causing any apparent symptoms.' He then proves his assertion by printing several skiagraphic pictures of the lower end of the forearm which show a white line running more or less transversely across the lower end

of the ulna. In one case the patient was shown, he says, five days after the injury to an audience of about one hundred physicians. No one of these was able to recognize the ulnar fracture by examination of the patient, in whom there was, according to the author, no visible deformity at the seat of the ulnar fracture. It is curious that neither the professor himself nor his one hundred colleagues recognized the supposed line of fracture as the unossified epiphyseal cartilage normally present in children and young adults. This criticism is made because the unfortunate error of the author may lead to erroneous deductions and conclusions on the part of those who read his article."

In this same line Dr. Edward A. Tracy of Boston, Mass., writes on "The Fallacies of X-Ray Pictures" in which he concludes:

"Because X-ray pictures can be fallacious, should they be excluded from court as evidence? Certainly not. It is well to know their limitations, and to remember that appearances may deceive. X-rays, properly used, are as a search-light in the exposition of bone lesions. But the lesions must be pictured from different directions, and the resultant pictures compared with pictures of the normal opposite member. Moreover the pictures of the injured member and those of the opposite normal member, must be taken with the same relative positions of the Crooke's tube, the limb and the sensitized plate. Then can truth be arrived at, and truth is essential for justice." (*Journ. Amer. Med. Asso.*, Vol. XXIX, page 949.)

Saligenin (produced synthetically from phenol and formaldehyde) was not spoken of here last year, for the reason that so little was said about it in the current literature. Not much more has been said during the past year, but one prominent article may be mentioned, that of Dr. Walter of Sulzbach, Bavaria, entitled "Saligenin and Aminoform, two Antiuratic Remedies." He reports favorable results in the treatment of gouty conditions, especially in acute attacks. He has not succeeded so well in the chronic type. (*Muench. Medicin. Wochensch.*, Vol. XLV, page 302.)

Salipyrin (reported to be a true salicylate of antipyrin) is still in use, although little spoken of directly. It has recently appeared in the form of several new compounds with metals. Thus an iron salicylate-antipyrin has been called "ferri-salipyrin," which appears as a yellowish-brown powder, and when mixed with water separates in irregular crystals with a greenish fluorescence. The combination nickel salicylate-antipyrin goes by the name of

"nickel-salipyrin." This is a pale green powder which, when dissolved in alcohol, crystalizes out in almost colorless, needle-like crystals which are reported to turn dark green after losing their water of crystalization. The combination cobalt salicylate-antipyrin goes by the name of "cobalt-salipyrin," and appears as a pale red powder, which crystalizes out from water in dark red crystals which finally turn a fine blue color. The above are only interesting items at this time as no definite clinical reports have yet appeared.

Salitannol is the name given to a new antiseptic condensation product resulting from the action of phosphorus oxychloride upon a mixture of salicylic acid and gallic acid in molecular quantities. The combination is reported to have distinct properties of its own. It appears in the form of a colorless, amorphous powder, insoluble in water, ether, chloroform, and benzine. It is also only slightly soluble in alcohol. It melts and is decomposed at a temperature of 210° C. (410° F.). It has had a limited but reported successful use as an external antiseptic in the treatment of all kinds of wounds, and is said to combine the properties of salicylic acid, gallic acid, and tannic acid.

Salol (phenyl salicylate), officinal (U. S. P.), is still a very prominent agent in the hands of the profession and the recent revision of the British Pharmacopœia has now recognized it as an officinal article. Its use is undoubtedly largely on the increase and only a few references can be given here out of the large number of reports. It may be worth quoting here completely the report of Dr. Herbert Bramwell of Cheltenham, England, on its use in typhoid fever, as follows:

"At the present time, when an epidemic of typhoid fever is causing so much distress, any method of treatment which has proved of undoubted value may be worthy of a short notice in your columns.

"During the last ten years the use of salol in typhoid fever has afforded me the most gratifying results. When steadily given in frequent small doses, either alone or combined with diaphoretics or astringents, or other drugs, as indicated, until the urine has become slightly tinged, marked benefit has invariably been obtained. Cases which appeared of a severe type and promised to result in a long and dangerous illness, have been so modified by its use as to pass through mild and uncomplicated courses of three to four weeks' duration.

"In several mild cases of undoubted typhoid, as proved by the

typical rash, the progress of the attack has been completely aborted, and convalescence established in the course of two to three weeks.

“The drug should be used in the powdered form, and not compressed, as in the latter case it frequently passes through the intestinal tract completely unchanged. It should be given in 5 to 10 grain doses, according to age, every four hours until the urine is tinged, when the amount and frequency of the dose must be diminished, giving only sufficient to maintain the faint coloration of the urine. Used in this manner it has, in my experience, invariably checked the increasing fever, and brought about a slow but steady defervescence, and improvement in all the other symptoms.

“During the first few days of treatment cold packs and sponging is usually required in severe cases, but only until the drug has had time to affect the development of the poison.” (*Brit. Med. Journ.*, Vol. II for 1897, page 1214.)

Another report of interest comes from Mr. Arthur H. Buck of Brighton, England, on the use of boric acid and salol in cystitis, as follows:

“The following case is probably of sufficient interest for publication on account both of the age of the patient and of the marked good effect of small doses of boracic acid and salol on bacterial urine.

“In the beginning of last December I performed supra-pubic lithotomy on a man eighty-three years of age. This operation was selected in preference to lithotrity on account of (1) the size of the stone, (2) its hardness, and (3) the presence of a large prostate. The bladder was drained after the operation by a large tube for three days, by a No. 12 catheter through the wound for three days, and by a catheter through the urethra for fourteen days. There was practically no escape of urine except through these tubes. Cystitis was present before the operation and in spite of washing out three and four times a day there were bacteria in freshly-drawn urine three weeks after the operation. The urine was of a dull, light yellow color and was becoming more alkaline, varying in quantity from three to five pints. On the twenty-second day 10 grains of boracic acid and 3 grains of salol were prescribed every four hours. Within two days the urine was acid, and in a fortnight it had regained its normal character, no albumin being present and no bacteria. The patient was up in a fortnight, and out of doors within six weeks after the operation. He

still continues well in every way, passing a catheter nightly to get rid of residual urine. The calculus measured $1\frac{1}{2}$ inches by $1\frac{1}{4}$ inches; it was composed of oxylate of lime and weighed one ounce." (London *Lancet*, Vol. I for 1898, page 1322.)

Finally, Dr. Oscar Werler of Berlin, Germany, having discovered that salol is soluble in oil of salosantal, proposes its use in urinary affections. The solubility is found to be 33 per cent., and his dose varies from 10 to 20 drops after each meal, given in a tablespoonful of water slightly sweetened. His results are based on ten cases, showing the advantages to be as follows: It is an analgesic as well as antiseptic; it appears to be equally efficient in alkaline and acid urine; it appears to act as a diuretic, and finally it is inexpensive. His best results were obtained in those affections of the urethra and bladder in which injections were impossible on account of the extreme sensitiveness of the parts. Good results were obtained in acute exacerbations and complications where painful inflammatory reactions occurred; again, in cases of chronic catarrh of the bladder with either alkaline or acid urine present, and finally in cases of obstinate and chronic gonorrhœa. (*Therap. Monatsh.*, Vol. XII, page 266.)

Salophen (acetyl-para-amido-salol) is still much used, but little has been reported upon it directly during the past year. Rheumatic affections still take a prominent place in the list of its applications. Dr. N. Klimenko of Russia has obtained excellent results in cases where sodium salicylate had failed him both in acute and chronic rheumatism. He has obtained in some cases analgesic effects. His dose varied from 3 to 6 grammes (46.3 to 92.6 grains) daily. (*Presse Médicale*, Vol. V, second half, page 348.)

It is reported (*Gazette hebdom. de Médecine et de Chirurg.*, Vol. V, new series, page 418) that this agent acts promptly, not only in ordinary headaches, but in migraine, facial neuralgia, toothache, and influenza. The initial dose recommended is 1 gramme (15.4 grains) dissolved in water which may be repeated in an hour. However, in cases of influenza it is recommended to divide the dose, giving 450 to 500 milligrammes (7 to 7.7 grains) every two or three hours, so that the dose may be diminished gradually as the relief is evident. In cases of an epidemic of influenza, if taken early and in small doses, it appears to act as a prophylactic.

Dr. Richard Drews of Hamburg, Germany, appears to have made quite extensive use of this agent and reports on its therapeutic results. (*Therap. Monatsh.*, Vol. XII, page 146.) His conclusions are that it is quite harmless in such daily doses as 3 to 6

grammes (46.3 to 92.6 grains); being quite odorless and tasteless, it can be given either in the usual forms or simply in the original powder; its action is such that it splits up into its component parts slowly in the intestine, having passed through the stomach without change. It therefore has no toxic effects; it exhibits none of the unpleasant sequelæ of either salicylic acid or sodium salicylate in acute, sub-acute, and muscular rheumatism, and acts equally as well as these agents; in chronic, articular rheumatism, however, he finds it has no advantage over salicylate acid or sodium salicylate; it acts well in cephalalgia, migraine, and various forms of neuralgia; he has obtained the good results noticed by others in influenza, but particularly the nervous form; in chorea he has had good results; in skin affections in which itching is present, such as prurigo, urticaria, psoriasis, and that present in diabetes and eczema, it has given him good results.

Salubrol (di-methylene-antipyrin bromide), the new general antiseptic of last year offered as a substitute for iodoform, has not been heard of in the current medical literature of the year, and therefore has probably taken a very subordinate place in the list of general antiseptics.

Sanatogen is the name given to an albuminous preparation consisting of sodium and casein glycerino-phosphate prepared from milk casein. It varies slightly in its composition, but on an average it contains 13.02 per cent. of nitrogen. It is readily soluble, and has a pleasanter taste and odor than other milk casein preparations. Mr. G. N. Vis, Ph. D., and G. Treupel, M. D., of Freiburg, Germany, have investigated its digestibility in healthy men over a period of a week at a time. They have carefully managed to have the same amount of work done on each day as far as possible, and have calculated that about half the total amount of nitrogen supplied in the food should come from sanatogen. It was given in 5 gramme (teaspoonful) doses with each meal, after having been rubbed up in cold water and added to warm soup. No other clinical reports are yet on record except those of Dr. Hermann Schlesinger of Frankfort-on-the-Main, Prussia, who has used it in a number of cases with good effect. He has published his results under the head of "The Employment of Sanatogen in States of Disease." (*Muench. Medicin. Wochens.*, Vol. XLV., page 716.)

Sanoform (di-iodo-methyl salicylate), the iodoform substitute containing 62.7 per cent. of iodine, has not been commented upon in the medical literature of the year.

Sanose is the name given to another new albuminous preparation containing 80 per cent. of casein, and 20 per cent. albumose. It is offered as a colorless, tasteless, and odorless powder, which resembles milk in appearance when mixed with water. Drs. Schreiber and Waldvogel of Göttingen, Prussia, working in Professor Ebstein's clinic, speak favorably of its action. (*Deut. Med. Wochensch., Therap. Beilage*, Vol. XXIII, page 65.) They have made use of it in the form of a palatable bread, which is rendered more albuminous by adding 10 per cent. of this agent. This form of bread is well suited to those who dislike meat, or for whom the amount of meat must be limited. These observers claim that it has no tendency to produce diarrhoea, which other like agents have. In their report, they give an interesting series of tables, showing its metabolism in fourteen cases. No other very definite reports have yet occurred as to its use or action.

Somatose, the tonic and nutrient, has been given somewhat more attention in the current medical literature of the past year, and for the convenience of those who desire to make a more extended use of it a fairly complete summary of the references will be given here. Dr. Richard Drews of Hamburg, Germany, has continued his previous investigations with this article, and now publishes his notes on seventy-five additional cases of his own, which, added to the twenty-five previous ones, make one hundred in all. Added to these, he has been favored by reports of forty-five other cases observed by his physician friends. His present seventy-five cases quite confirm his previous views, and his observations have been confined pretty closely to its action on the mammary gland. It naturally has no action where the mammary gland is deficient, or incapable of secreting. In cases, however, of insufficient secretion, its administration has produced an abundant secretion of milk in a few days, after galactogogues had failed. In nearly all the cases showing a deficiency in secretion, the patients complained of headache and pains in the back and breasts, together with loss of appetite. After the administration of somatose restoring the secretion, these symptoms all disappeared. His other observations will be interesting to those who care to look further into the subject. Dr. Drews explains its effects as those of a direct stimulation of the gland tissue itself, and not by an improvement in the general condition. (*Centralblatt für Innere Medicin.*, Vol. XIX, page 65.)

Dr. Georg Joachim of Berlin, Germany, offers "A Contribution to the Question of the Action of Somatose on the Mammary Glands

of Nursing Women" (*Centralblatt für Innere Medicin.*, Vol. XIX, page 233), giving his observations on fifteen cases in which there was a deficiency of secretion, and is satisfied that it produced not only an increased quantity of milk, but also a better quality. He disagrees with Dr. Drews in the claim that it has a specific action on the gland tissue itself, for he believes that it acts only by increasing the appetite and improving the general condition of the patient. He takes pains to give the details of three cases bearing out his views.

At a meeting of the Paris Medical Society of the Hospitals on June 17, last, a case was reported (which, apparently, was quite unusual) of glycosuria, produced by the use of somatose. During the discussion, it was claimed by others who stated they had never observed such a result which could be directly attributed to somatose, that glycosuria was not uncommon during lactation, and, therefore, it should not stand against this article of diet.

Dr. Adolf Schmidt of Bonn, Prussia, working in Professor Schultz' clinic, reports that he has observed that somatose causes diarrhœa, although he notices that it is one of the best artificial foods. He has observed that a somatose prepared from milk casein has decided advantages over that prepared from meat casein, for it is freer from salts, but is apt to cause diarrhœa oftener when given in large doses than the meat somatose. He, therefore, has made a practice of adding 5 per cent. of tannin to the milk somatose, which he claims forms a chemical combination well suited to weak digestive organs. He gives the name of "tannin somatose" to this preparation. He states it is soluble in water, and can be given in quite large doses without bad effects. His dose varies from 5 to 10 grammes (one to two teaspoonfuls), dissolved in hot water and made into a broth with a meat extract, which is well suited to chronic affections of the alimentary tract. His experience in fifteen cases of typhoid fever was very gratifying,—in only two of the cases was it vomited after administration. Based on his complete observations, he finds it simply slightly astringent but not irritating, and is worthy of a more extended use. (*Muench. Med. Wochensch.*, Vol. XLIV, page 1318.)

Dr. Rudolf Neumann of Würzburg, Bavaria, has published his "Observations on Metabolism with Somatose and Nutrose" (*Muench. Medicin. Wochensch.*, Vol. XLV, page 72). He carried on a careful investigation as to the amount of nitrogen injected and excreted, in which a mixed diet was given for four days and then followed with a five days' diet including somatose. For three

days of the five he used meat somatose and the other two days milk somatose. He finally concludes, however, that too general conclusions cannot be drawn from his results for there are so many conflicting elements entering into such an investigation. The food stuffs used in conjunction must surely bear quite an important part in the general improvement, and therefore he claims it will always be difficult to fix the exact amount of benefit due to any artificial food product.

There has recently been offered an iron somatose which is evidently indicated in cases of anæmia and chlorosis. It appears in the form of a tasteless powder of much the color of cocoa, dissolving readily in water, giving a dark-brown solution. Encouraging results are reported in a very general way, in that it simply appears to have advantages over the ordinary inorganic iron compounds. It is an astringent and appears to have a laxative effect upon the bowels rather than a constipating one.

Dr. Theodor Panzer working in Dr. E. Neusser's clinic in Vienna, Austria, has made use of this iron somatose and records his results in a paper entitled "The Effect of Iron Somatose" (*Wien. klin. Wochensch.*, Vol. XI, page 611), on 11 cases of anæmia, 8 being chlorotic, 1 of purpura hæmorrhagica, 1 secondary to gastric ulcer, and 1 of unknown cause. He administered this iron somatose for an extended period and obtained very favorable results in one case of secondary anæmia and in three cases of chlorosis. The other cases varied somewhat in their action, but produced favorable results after a more prolonged use of the article. He found one of the greatest advantages of this form of food product, was that it was almost invariably well taken and produced nausea and vomiting only in one case. He states the great drawback to its more extended use is its excessively high price.

Sozo-iodol (di-iodo-para-phenyl-sulphonic acid), the iodoform substitute, has not been commented upon during the past year, except in the way of repetition of previous results.

Sulphonal (di-ethyl-sulphon-di-methyl-methane) has lost nothing of its importance during the past year and is one of the best known agents in the physician's hands. However, the poisoning cases continue, and at times are still due to the bad habit of the patients dosing themselves whenever they are affected with sleeplessness.

Mr. J. F. Gillett of Andover, England, reports a case of poisoning which may be interesting to those who are keeping a record of such effects :

“At 10 p. m. on July 9th I was called to see E. C., an anæmic and somewhat neurotic girl, aged 17. She had lately been suffering from neuralgia, and on the day mentioned she had taken altogether 60 grains of sulphonal—20 grains at 11 a. m., 20 at 2 p. m., and 20 at 3 p. m. Soon after 3 p. m. she began to be drowsy, and went to bed and slept for about two hours, when she woke up with a feeling of nausea, but was not sick. On getting up she was markedly ataxic, and ‘walked as though very drunk.’ Her condition rapidly became worse, and at 10 p. m. I was called in. I found the patient lying on the bed with closed eyes, and noticed marked muscular twitchings. The respirations were 48 and shallow, but every few minutes she took several deep breaths. The temperature was 95.4°, and the extremities were cold, with marked signs of cardiac weakness. The pulse was very feeble and hard to count, but I registered it at 58. The pupils were slightly dilated, reacted slowly to light, and the corneal reflex was absent. The patient had hallucinations, thinking she was pursued by beetles and fleas; but when spoken to or roused, she became wildly delirious, striking and fighting with her attendants until completely exhausted. Not knowing the nature of the drug taken, I could only treat the most pressing symptom, and strychnine and brandy were repeatedly administered hypodermically. The patient’s condition somewhat improved at 5 a. m.; during the day she slept and took nourishment well, but the bowels were not relieved, and she passed no urine. Towards evening she again became delirious, but her pulse was good. Croton oil was given, and also hyoscyne hypodermically. This quieted the patient, and the oil operated freely. After some hours (thirty-six since commencement of the attack), five ounces of urine were passed; this contained no albumen. After this the patient made a slow but uninterrupted recovery.” (*Brit. Med. Journ.*, Vol. II for 1898, page 808.)

Dr. Otto Wien of Lübeck, Germany, relates a fatal case of sub-acute poisoning in a woman 32 years of age who was suffering from paranoia. (*Berlin klin. Wochensch.*, Vol. XXXV, page 863.) After relating the symptoms he closes by drawing the conclusion that the great danger in sulphonal poisoning seems to lie in the irreparable changes found in the heart. He states that nine tenths of the fatal cases have occurred in women, and although the total number of cases is small considering the amount of this agent used, yet he urges that precautions must always be taken. He advises that its use should be as limited as possible, and the customary intermissions of from four to five days are often too short. He

lays great stress upon the fact that efforts should be exerted to promote rapid excretion of the sulphonal through the kidneys.

Dr. Paul Pollitz of Brieg, Prussia, relates (*Vierteljahrssch. für gericht. Medicin.*, Vol. XV, page 297) a case of the peculiar susceptibility of women to the toxic action of sulphonal, which may be of interest to those who are keeping a record of these cases.

Tannalbin (a compound of tannin and albumin) is still before the profession and reports continue to be made of its practical usefulness.

Dr. Hans Osk. Wyss of Zurich, Switzerland, reports his results from 75 cases of intestinal affections in children. He claims he cured 53, and 10 were improved in health. He obtained uniformly prompt action in all his cases of enteritis and acute gastro-enteritis. Subacute cases ran along for a few days before complete recovery, and he had gratifying results in a few cases in which all the other remedies tried had failed him. His dose was 250 milligrammes (3.6 grains) from two to six times a day for children at the breast and up to two years of age. Five hundred milligrammes (7.7 grains) from two years up to five years, three to five times daily. He found it advantageous at times to inject into the rectum a dose of 500 milligrammes (7.7 grains) incorporated with starch, and favorable results were obtained especially when he continued to administer by the mouth. (*Correspondenz-Blatt für Schweizer Aerzte*, Vol. XXVII, page 449.)

Dr. Johann Czernetschka of Prague, Bohemia, reports that he finds especially good results in the use of this agent in infants at the breast and in rachitic children. This report together with that of Dr. Wyss and Dr. L. Roemheld of Heidelberg, Germany, is summarized in the *Deutsche Medizinal-Zeitung* (Vol. for 1897, page 1041). Others have reported in the same favorable line as the above.

Dr. William Henry Porter has written on this agent under the title "Tannalbin: Its Physiological and Therapeutic Action," which article will be of interest to those who care to follow up the subject. (*The Post-Graduate*, Vol. XII, page 647.)

From Germany comes a suggestion for the manufacture of an article quite equal to tannalbin, which can be produced at a much less cost. The directions to accomplish this are about as follows:

A mixture is made of

Albumin solution, 10 per cent.	.	.	10	parts.
Tannin " 10 per cent.	.	.	6.5	"

from which a precipitate is collected. After washing well, pressing

out and drying at 30° C. (86° F.) it may be powdered, sifted through a fine sieve, and spread out thinly, to be heated for about six hours at 120° C. (248° F.). This product is claimed to do all that the previously new product has done.

Tannigen (acetyl tannin), the odorless and tasteless form of tannin, insoluble in water and acids, but readily soluble in alkaline solutions, has not been commented upon specially in the current literature of the past year, although undoubtedly it is still much in use and is claimed by some to have equal if not greater advantages over the other tannin compounds.

Tannoform (the condensation product of tannin and formaldehyde) has not been heard of in the literature much more than in the previous year, but two special articles have appeared which may be of value for those to read who desire to follow up the subject. Dr. Hesse of Darmstadt, Germany, reports his experience of its therapeutic action as a local application for decubitus, diabetic gangrene, and different forms of moist eczema. In gonorrhœa also he reports very definite favorable results. On open wounds after operations he has found it to be a valuable antiseptic, showing no toxic properties and little if any irritation. In cases of hyperidrosis not only of the body but of the feet it outranks any other remedy known to Dr. Hesse. He used it in the form of a mixed powder consisting of :

Tannoform	.	.	.	.	.	.	.	1 part
Talcum	.	.	.	.	.	.	.	2 parts

This undiluted powder is dusted on, however, only in very severe cases. A ten per cent. ointment gave the best results in decubitus and the various forms of moist eczema. (*Aerztliche Rundschau*, Vol. VIII, page 394.)

Dr. Carl Sziklai of Kis-Zombor, Austria-Hungary, reports his decided success in the treatment of forty cases of intestinal catarrh in children. His maximum dose for a child was thirty-two milligrammes (one-half grain), and in his experience two or three such doses only will be necessary to perceptibly check any diarrhœa. He rarely had to give as many as ten doses. In adults he had equally favorable results. A preliminary dose of castor oil was found not only effective but quite necessary in cases of dysentery. (*Therap. Wochens.*, Vol. IV, page 1050.)

Tannone is the name given to a condensation product of tannin and urotropin, recommended as of value in intestinal affections. By analysis it is found to contain 87 per cent. of tannin and 13 per

cent. of urotropin. It appears as a light-brown, tasteless powder, almost insoluble in water, weak acids, alcohol and ether, but will dissolve slowly in weak alkalies. It splits up in the system, and urotropin is found in the urine. Two hundred to 500 milligrammes (from 3 to 7.7 grains) is recommended as a dose for children, given several times per day. For adults the dose is 1 gramme (15.4 grains). The name for this agent has been superseded by the new name.

Tannopin. Under this head Dr. Carl Fuchs of Vienna, Austria, reports seven cases as seen in the clinic of Professor Drasche. He claims its superior value in the treatment of affections of the urinary organs exactly as Nicolaier originally claimed. He confirms the observations of Dr. E. Schreiber, who, working in Professor Ebstein's clinic, had the opportunity of testing it in thirty-two intestinal cases, which included those of acute and chronic catarrh, tuberculous enteritis and typhoid fever. He alludes to his sixth patient as not giving as satisfactory results as the others, for the reason that the diarrhoea occurred in the course of Bright's disease, when this agent did not act as satisfactorily. After administration of the tannopin for weeks the diarrhoea did not disappear entirely, although the number of stools was reduced from five to two each day. In his seventh case, which was one of cystitis, this agent reduced the smarting felt during micturition. The flow of urine increased and became clearer, with less pus in it. Although the amount passed each time was increased, he was disappointed in finding that the frequency of micturition was not diminished, thus proving to him that this agent was inferior in its action to urotropin itself. This confirmed Dr. Schreiber's observation on this point. (*Die Heilkunde*, Vol. II, page 677.)

Tanosal, the new synthetic combination of tannic acid and creosote in the proportion of 2 to 3, has not been commented upon specially throughout the past year.

Terebene (produced by the action of strong sulphuric acid on oil of turpentine) is still used in various parts of the world. It was given up for a time by some users in certain localities, but these have finally come back to it after hearing favorable reports from other quarters. It has only just been recognized by the new revision of the British Pharmacopœia, although it has been much used throughout the British Islands. It has been alluded to, however, as an illustration of tardy recognition, that now the British Pharmacopœia recognizes it when it has practically gone out of use in some parts of Scotland.

"A Russian doctor has employed a glycerol of terebene, prepared as described below, with much success as an antiseptic dressing. Doubtless the efficacy of the preparation is due to the hydrogen peroxide which it contains. Into a stoppered separator of a capacity of 5 or 6 litres, a mixture of glycerin, 7, water, 1, and terebene, 4, is added and left for a fortnight, with frequent agitation, at ordinary temperatures. The mouth of the bottle is fitted with a cork carrying two tubes, one of which passes to the bottom of the liquid; with this arrangement air is occasionally drawn through the fluid. Gradually the lower stratum, which originally consisted of glycerin and water, changes to an opaque, viscous mass, having the aromatic odor of terebene. This is the glycerol used. Compresses of tarlatan impregnated with this substance are placed directly on the parts, which are then covered with absorbent cotton. It is an energetic disinfectant, and promotes the rapid healing of wounds." (*Pharm. Journ.*, Vol. VI, page 237.)

Theobromin (the chief base found in the seeds of *theobroma cacao*) is still thought considerably of by some practitioners, particularly as a diuretic, although many other agents have been pushed with much more energy and thereby have taken the place somewhat of this older one. However, there appears to be some room for it in the list of efficient agents. It appears to be of benefit in the treatment of senile asystole, whereby diuresis is established within twenty-four hours after its administration, and the œdemic and uræmic symptoms disappear. Prolonged administration is not called for and generally is objectionable. It is followed up by systematic treatment with potassium iodide, which brings relief. A subsequent appearance of the œdema calls for a repetition of the same course of treatment. The headache, nausea, vomiting, and cerebral disturbance frequently noticed, vary in individual cases, thus showing the lack of uniformity in its action.

An English manufacturing firm has offered a mixture consisting of:

Theobromin (di-methyl-xanthin)

Sparteïn sulphate

Calomel

Camphor

under the name of "Parahydropin," offered in the form of a colorless, insoluble powder, put up in cachets. It would appear that caffeïn had been used in a similar combination, for it is pointed out that as the composition of caffeïn is tri-methyl-xanthin, the one

less methyl radical renders the theobromin less apt to effect the nervous system, and thereby form a longer period of sleep.

Thioform (so-called bismuth di-thio-salicylate), a combination of bismuth, sulphur, and salicylic acid, one of the substitutes for iodoform, has not been heard of in the current medical literature of the past year.

Thiol (synthetic ichthyol) is still before the profession. It continues to be found useful in burns of varying degrees. Some little experience has been had with it in fissures of the nipple, incipient mastitis, varicose dermatitis of the leg, pruritis vulvæ, and quite a long list of similar affections. The topical applications have taken various forms, all of which have proved efficient in the individual cases.

Thiosinamin (allyl-sulpho-carbamide) has not received as much attention in the current literature of the year as in the previous year. However, the most prominent mention has been that of Dr. Sinclair Tousey of New York city, who has continued his observations for the past three years, and now contributes another article under the head of "Thiosinamin : A Further Study of its use in the Treatment of Keloid, 'Inoperable Tumors,' and Cicatricial Conditions, Including Deafness," in which he states :

"I write further upon the subject in order to answer a number of inquiries, and also to record the ultimate results in the cases already described. In addition thereto, a number of later cases in my own practice and that of others will be reported," and concludes as follows :

"It would appear from what has been said that thiosinamin sought out the disease, in whatever part existing, and destroyed it. This sounds rather extravagant, but mercury and arsenic and iodide of potassium and a good many other drugs might be said to have the same power. The idea is that this drug sets up an unusual cellular activity in the blood and in the lymphatic and connective tissues which are the nurseries of leucocytes ; and that lowly vitalized tissue (*e. g.*, cicatricial tissue) is affected wherever it may be located.

"The bibliography of thiosinamin is complete as given at the conclusion of my first article, with the addition of my article in the *New York Medical Journal*, May 2, 1896 ; Dr. R. C. Newton's, in the *New York Medical Journal*, March 20, 1897 ; and my remarks on page 397 of the same number of the *Journal*." (*N. Y. Medical Journ.*, Vol. LXVI, page 624.)

Thymoform is the name which has been adopted for the conden-

sation product of thymol and formaldehyde. It appears as a yellow, quite tasteless powder with a faint odor of thymol. It is insoluble in water, but readily soluble in ether, alcohol, chloroform, and olive oil. When combined with iodine in the attempt to make it a convenient substitute for either iodoform or dermatol, it is known under the name of "iodo-thymoform." This latter product is yellow in color and nearly odorless. It is readily soluble in glycerin as well as in chloroform, ether, and olive oil. The method of its preparation has been patented. There have been as yet no clinical reports from this product.

Thymol (propyl-meta-cresol), officinal, need hardly be commented upon here except in the way of mentioning one or two uses which are a little out of the ordinary.

Dr. Numa Campi reports having made successful use of it as a tæniafuge, particularly against *ankylostoma duodenale*. He carries out the following plan: 15 grammes (about 4 drachms) of castor oil are given some little time after the last meal of the day. Then the next morning treatment begins with the thymol in 650 milligramme (10 grain) doses every quarter of an hour, and after twelve doses have been given another dose of castor oil is taken. At times the depressing influence of thymol has to be counteracted by the administration of some stimulant. Aside from this the action is prompt and effective and pronounced by Dr. Campi as quite complete. (*Journal de Médecine de Paris*, Vol. X, second series, page 366.)

Dr. Ernst Fischer of Strassburg, Germany, has made use of this agent in the treatment of pertussis in five of his own children. He, however, made use of a proprietary preparation called "Pertussin" which professes to be the thymol extract prepared in a special way by a Berlin chemist. The mixture consists of thymol 1 part, and syrup 7 parts, making a brownish syrupy liquid with an aromatic odor. His children took it well in doses varying from 8 to 15 grammes (2 to 4 fluid drachms) three times each day. The effect was quite marked in that the disturbing cough was promptly relieved and the cyanotic attacks rapidly diminished in number. This occurred after other agents had been tried with no results. He pushed his investigations with this mixture in the treatment of chronic catarrh of the larynx and bronchi with good results. Emphysema was much relieved also by this mixture. (*Deut. Med. Wochensh., Therap. Beilage*, Vol. XXIV, page 49.)

The above doses of Dr. Fischer were so large that Dr. Thomas Rutherford of Kelso, Scotland, took pains to write to the editor of

the *British Medical Journal* (Vol. II for 1898, page 1020) commenting upon them. He writes as follows:

"The doses are undoubtedly large, and many would rightly hesitate to employ them. The dose of thymol is usually put down at from $\frac{1}{2}$ to 2 gr., but Dr. Lauder Brunton places the higher limit at 10 gr. The largest doses up to 30 gr. have been used in ankylostomiasis, but here, as Dr. Patrick Manson in his recent text-book on tropical diseases points out, certain precautions should be adopted. Thus the patients must not take any solvent of thymol such as alcohol, oils, etc., after the administration of the remedy. Dr. Manson also refers to some recorded cases of fatal poisoning by thymol, and states that an equally efficient but safer drug is a desideratum in the treatment of ankylostomiasis. The comparative innocuousness of thymol is due to its insolubility. It is employed in ankylostomiasis merely on account of its local vermifugal effect, but in whooping cough it could only exercise a beneficent action, if any, when absorbed. At this point of absorption the possible dangers of poisoning must be reckoned with."

Thyroid Extract (thyro-iodin) still assumes a very important position among the agents used by the medical profession at this time. It continues to have its enthusiastic advocates and quite a considerable circle of skeptics, and at times an increasing number of opponents.

The most favorable report in this line of study was made by Dr. R. H. Cunningham of the College of Physicians and Surgeons, New York city, as far back as August, 1896, when he offered the results of his observations in an article entitled "Experimental Thyroidism," which was not published until March of this year, and appeared in *The Journal of Experimental Medicine* (Vol. III, page 147). Although this delay was much regretted by all concerned, still the work is monumental in its character, and the principles laid down need little change at this date. An appendix was added of much value, and is introduced as follows:

"As practically the whole of this paper was already written before the publication of the second contribution of Baumann and Roos, in which is described the method of preparing the principle 'thyro-iodine,' which they consider to be the active substance of the thyroid gland, my experience with that body must be related briefly in this appendix." . . .

He concludes as follows:

"From the results of the various experiments already detailed, I feel justified in drawing the following conclusions:

"1. Absolutely fresh thyroid gland is not poisonous, in the usual sense of the term, when absorbed through the alimentary canal.

"2. The symptoms of induced thyroidism are manifestations of an intoxication resulting from the ingestion of decomposed thyroid material, a conclusion that agrees in part with the previously related observations of Lanz.

"3. The so-called experimental thyroidism is not specific for the thyroid only, for the ingestion of many substances derived from animal tissues other than the thyroid gland may produce an intoxication strikingly similar in every respect to that of experimental thyroidism.

"4. Most, if not all, animal tissues yield substances which, if injected in large quantities directly into the circulation or beneath the skin, will produce an intoxication often very similar to that produced by injections of various substances derived from the fresh thyroid tissue.

"5. The effects resulting from the intravascular or subcutaneous injections of aqueous extracts, decoctions, and the concentrated extractives of the thyroid tissue, of the thymus, of muscle, etc., are by no means necessarily indicative of the function and the action of the hypothetical internal secretions of the same tissues during life.

"6. The utilization of the fact that ingestion of decomposed thyroid material produces on certain occasions an intoxication with certain symptoms similar to some of those of Graves' disease is not justifiable for the furtherance of the theory that the symptoms of exophthalmic goitre result from an over production of the thyroid secretion.

"7. Our results lead us to conclude with Drechsel that the fresh thyroid tissue yields at least probably two substances that are capable of palliating the symptoms of the acute cachexia in totally thyroidless dogs.

"8. The thymus tissue also yields one, and probably two, substances that are as equally capable as the thyroid extractives of palliating the acute cachexia in totally thyroidless dogs.

"9. Neither of the above substances is an enzyme, nor does either contain iodine.

"10. Neither the feeding of minced raw thyroid glands, nor the injection of aqueous thyroid extracts, decoctions, and concentrated solutions of the extracted palliative thyroid principles is capable of keeping *totally thyroidless* young dogs alive longer than a few

weeks (possibly three weeks). Still less capable are the thyroid preparations containing decomposition products.

"11. The presence of one, or usually several, small accessory thyroid bodies, which gradually hypertrophy and wholly or partially assume the functions of the excised thyroid lobes, accounts for the occasionally long survival of thyroidectomized, thyroid-fed, young dogs.

"12. Totally thyroidless young dogs are so quickly overwhelmed by the cachexia, and the intervals between the thyroidectomy and the onset of the severe dyspnoic attacks and subsequent deaths differ so slightly, no matter which of the usual varieties of fresh food are employed, that *kinds* of fresh food cannot be unquestionably affirmed to influence the onset of the cachexia in any especially definite manner. Animal foods, in which constituents poisonous to rabbits have developed, probably slightly hasten the onset of the severer symptoms, and the vaunted remarkably modifying influence of a diet of ordinary milk, such as Breisacher observed, does not exist in the case of the totally thyroidless dog.

"13. Monkeys whose general metabolism is disturbed in consequence of the removal of a greater portion of the thyroid gland, evidently become more susceptible to those constituents of meat that are poisonous to rabbits, and sufficient clinical evidence exists for concluding that probably a like susceptibility to animal foods containing such constituents also exists in men when the function of the thyroid gland is sufficiently disturbed.

"14. And, finally, as regards the thyroid factor in the pathology of exophthalmic goitre, I agree with Gley that the majority of the symptoms in many patients with that disease can apparently, from an experimental standpoint, be as plausibly explained by the hypothesis of partially *deficient* thyroid activity as by the hypothesis of augmentation of thyroid function."

In line with the results of the above observations, the report of Mr. William MacLennan of Glasgow, Scotland, "On the Treatment of Obesity and Myxœdema by a New Preparation of Thyroid ('Thyroglandin') is of interest. He concludes as follows:

"The very active therapeutic properties which are exhibited by thyroglandin lead me to believe it is a preparation of great value. If it really represents all the active constituents present in the gland in their correct form and proportion, it may prove a very useful addition to our thyroid preparations." (*Brit. Med. Journ.*, Vol. II for 1898, page 79.)

One of the most prominent writers of the year was Dr. Robert

Hutchison of London, England, who has investigated "The Pharmacological Action of the Thyroid Gland." He introduces his subject as follows:

"The recent promotion of the thyroid to an official position in the *British Pharmacopœia* makes this a suitable time to state what is known as to its pharmacological action. More especially is this the case owing to the fact that the literature relating to the thyroid has recently swelled to such enormous proportions that he who runs is certainly no longer able to read it, whilst embedded in that literature there are yet a number of facts and observations which have a very direct bearing on the therapeutic use of the substance. It may, therefore, be permitted to one who, from the special nature of his own investigations, has been obliged to read all that has been written on the subject, to discuss briefly the present state of our knowledge as to the physiological effects of the administration of the thyroid, and the bearing of that knowledge upon its use as a medicinal agent."

He divides his subject into four heads:

I.—Effects upon Metabolism.

II.—Effects on the Circulation and Blood.

III.—Excretion of the Active Constituent of the Thyroid.

IV.—Dosage of Thyroid Preparations.

He feels called upon at the close of his article to add the following postscript:

"Since the above article was written, there has appeared in this journal (July 9th, 1898) a paper by Dr. William MacLennan describing a new thyroid preparation ('thyroglandin'). As that paper contains a number of what (in my judgment) are serious errors as to the facts of the chemistry of the thyroid and the nature of its active constituent, I feel that I ought to make a short reference to it. Dr. MacLennan asserts that the thyroid contains two important principles—an iodoglobulin and iodothyryn—and that both of these are requisite to produce the specific effects of the gland itself. This assertion is quite unfounded in fact. As I have shown elsewhere, the fresh thyroid contains only one iodine-containing compound, namely, the colloid matter. This consists of a proteid part (possibly a globulin) combined with an organic compound of iodine (crude iodothyryn), and the latter compound is split off on hydrolysis of the colloid. The specific effects of the thyroid can be produced by the administration either of the colloid matter as a whole or of the iodothyryn split off from it. The effects produced by both preparations are identical, provided an equiva-

lent dose of each is employed. Further, the colloid matter contains all the activity of the thyroid, the extractive being incapable of producing any of the specific effects of the gland.

"It is not the case that all of the processes which have been devised for separating the active constituent of the gland result either 'in the destruction of the iodoglobulin entirely, or in the partial separation of the iodothyrim only.' In the preparation of the colloid matter, as described by myself, the glands are extracted with dilute caustic soda without the aid of heat. The colloid matter is so soluble in alkalies that it goes entirely into the solution, and if any traces of iodothyrim happen to have been split off from it in the gland, these are also dissolved. The subsequent addition of acetic acid throws down the colloid, and it is afterwards dried without having undergone any decomposition whatever. Furthermore, this separation is accomplished without any other substance of a 'useless or objectionable nature' being contained in the final product.

"The process which Dr. MacLennan describes as that by which 'thyroglandin' is prepared will be perceived at once by anyone conversant with the chemistry of the thyroid to result in the extraction of the colloid matter, *plus* the salts, extractives, and any other substance which happens to be present, and which is soluble either in water or in boiling caustic soda solution. As the salts and extractives have been found to be 'useless,' and as the other substances (for example, products of decomposition) may very easily be objectionable, I entirely fail to see the superiority of this process over those already in existence. That the product is simply an impure form of the colloid matter I entertain no doubt at all, and by the administration of $1\frac{1}{2}$ grain of the latter thrice daily I have over and over again obtained quite as marked results as were produced by double that dose of thyroglandin. I therefore cannot regard the latter preparation as in any way superior to those with which the profession is already familiar."

Then follows a valuable bibliography in the form of a classified list of papers bearing upon the pharmacological action of the thyroid, which he rightly says will be a convenience for other workers. (*Brit. Med. Journ.*, Vol. II for 1898, page 142.)

Dr. Hutchison's paper called forth a letter to the editor of the *Brit. Med. Journ.* from Dr. George Murray of Newcastle-on-Tyne, England, on the question of dosage which is of sufficient value in connection with the above to quote here in full:

"Dr. Robert Hutchison's excellent paper in the *British Medical*

Journal of July 16th on 'The Pharmacological Action of the Thyroid Gland' will I am sure be read with interest by many. There is, however, one statement with regard to the dosage of liquor thyroidei with which I am unable to agree. Liquor thyroidei is simply the original liquid thyroid extract devised and described by me in 1891, which the new Pharmacopœia committee has paid me the compliment of adopting, unaltered in strength or composition as an official preparation. The dose recommended in the *Pharmacopœia* is 5 to 15 minims, which are the proper limits of an ordinary dose for an average adult. Dr. Hutchison thinks this dose is too small, and that it would be better to give the dose as 15 to 60 minims. These doses are certainly too large, as doses ranging from 30 to 60 minims are likely to produce unpleasant effects, even if given only once daily. I have constantly used this preparation for more than seven years, and have found that 10 minims of it given once daily is quite sufficient to maintain an adult who has suffered from myxœdema in good health. Thus, for example, my first case of myxœdema, who has now been treated with liquid thyroidei for more than seven years, is maintained in continual good health by this amount.

"It seems, therefore, that this amount (10 minims) contains as much thyroid secretion as is daily formed and poured into the blood by the healthy gland. In some cases it appears to be even less than this, for in another case 5 to 7 minims was found to be the suitable daily dose, larger doses producing increased frequency of the pulse, etc. When this patient ultimately died from cardiac disease, microscopical examination showed that the whole of the thyroid gland was converted into fat and fibrous tissue, not a trace of glandular structure being left. In this case no secretion at all can have been formed by the diseased gland, so that the 7 minims were equivalent to the maximum amount of normal thyroid secretion. It is thus evident that the dose given by the *Pharmacopœia* is the right one. Of course this dose may be increased or repeated more frequently if it is desired, and produce a condition of thyroidism, but such doses are really toxic and beyond the ordinary range.

"In conclusion, I may mention that in my opinion liquor thyroidei gives better results in treatment than the dried preparations of the gland, so many of which are now used in the form of powders and tablets." (*Brit. Med. Journ.*, Vol. II for 1898, page 273.)

A prominent British pharmacist, Mr. E. C. C. Stanford, reported on "Thyroglandin" at the British Pharmaceutical conference held

in Belfast, Ireland, in August last. (*Pharm. Journ.*, Vol. VII, Fourth Series, page 166.)

Little further comment can be made here of the voluminous literature on the subject than mention a few more of the prominent allusions.

Dr. Clement Dukes of Rugby, England, writes on "Thyroid Extract as an Aid in the Development of Backward Children." (*Brit. Med. Journ.*, Vol. I for 1898, page 618.)

The results of various observers in the treatment of insanity have been rather disappointing. In a series of ten cases, one was a case of organic cerebral lesion in which the administration had to be discontinued early as it caused too much gastro-intestinal disturbance. Out of the ten cases only two benefited by the treatment and even in those some doubt was felt whether the improvement was due to the thyroïdin or whether it occurred in the natural course of the disease. Some peculiar physiological effects are spoken of as being present. The pulse was increased and there was loss of weight, but the temperature, sleep, and appetite remained normal. Salivation was noted in one case and twitching of the facial muscles in another.

A discussion on the treatment of goitre was held in the section of medicine of the Royal Academy of Medicine in Ireland on January 28th last when Dr. Richard A. Hayes read notes of a case of acute goitre being successfully treated by this extract. (*Brit. Med. Journ.*, Vol. I for 1898, page 500.)

Dr. Wm. Walton Don of West Hampstead, England, has written an article on "The Action of Thyroid Extract on the Skin as Illustrated in Cases of Ichthyosis." He gives quite full notes of the treatment of two cases, showing in a general way their progress. He closes as follows :

"The action of thyroid extract on the nervous system in most of my cases has been depressing, patients complaining of feeling debilitated and low; but in a case of myxœdema in which I used it its action was the very opposite.

"In the above cases the results are, I think, sufficiently encouraging to warrant a more extensive trial in ichthyosis, which has hitherto proved so intractable to treatment." (*Brit. Med. Journ.*, Vol. II for 1897, page 1334.)

Mr. Malcolm Morris read an address on "The Use and Abuse of Internal Remedies in the Treatment of Skin Diseases," at the annual meeting of the Reading Pathological Society on October 6th last, in which he commented on thyroid extract as follows:

“This agent has been credited with effects little short of marvelous in psoriasis and some other affections of the skin. Here, again, I am unable from my own experience to confirm the reports of Dr. Byrom Bramwell and others. The thyroid did in some cases seem to influence the condition for a time, but the effect after all was slight and extremely transient. Moreover, the remedy is, especially in elderly persons with weak hearts, distinctly dangerous, and even in healthy people it is apt to cause grave systemic disorder.” (*Brit. Med. Journ.*, Vol. II for 1898, page 1117.)

Dr. Frederick Page and Mr. William H. Bishop of Newcastle-on-Tyne, England, have offered a contribution on “Recurrent Carcinoma of the Female Breast Entirely Disappearing under the Persistent Use of Thyroid Extract Continued for Eighteen Months.” This is a comparatively new line of treatment, but the one case related simply gives encouragement for other trials. They conclude their remarks as follows :

“During the eighteen months that the treatment was persistently followed it was found necessary occasionally to suspend the use of the drug for some days on account of its toxic effect. The patient is now quite well. She has gained flesh and health to such an extent that it is difficult to believe that she is the same person who was operated upon two years and four months ago. There is no trace of the disease to be discovered.” (*London Lancet*, Vol. I for 1898, page 1460.)

Dr. G. Ernest Herman of Harley street, London, W., England, has reported “A Case of Recurrent Cancer of the Breast Treated by Oöphorectomy and Thyroid Extract,” after which he concludes as follows :

“I have since treated some cases of uterine and vaginal cancer by oöphorectomy and thyroid extract, but the results are not yet complete enough for publication.” (*London Lancet*, Vol. I for 1898, page 1612.)

A new preparation has been obtained by precipitating from the thyroid gland the iodo-albuminates, bases and mucous membranes by means of tannin. This preparation has been given the name of “aiodin.” It is claimed to be very rich in iodine. Dr. Otto Lanz of Bern, Switzerland, has experimented with it on dogs as well as human subjects with gratifying results. (*Berlin. klinische Wochens.*, Vol. XXXV, page 371.)

Mr. Charles A. Bois and Mr. Neil T. Kerr, medical officers of Lanark county asylum, Hartwood, England, read a report of their

investigations on "Clinical Studies with Spleen and Thyroid Extracts," before the British Medical Association at its annual meeting in Edinburgh in July last, which will be of interest to those who desire to follow up the general line of treatment with extractives. (*Brit. Med. Journ.*, Vol. II for 1898, page 684.)

In close relation to investigations with the thyroid gland will be found the results in the treatment with thymus gland, but Dr. Helm of Tangermünde, Prussian Saxony, has to report the death of a child due to thymus gland. (*Deut. Medicin. Wochensch.*, Vol. XXIV, page 303.)

A fitting close probably to this whole subject is what Dr. H. C. Wood of Philadelphia, Pa., has to say in regard to this line of treatment. He published the following "Note on Thyroid Extract":

"One who has followed the history of the use of drugs of animal origin must thereby have acquired skepticism. The clinical results which have followed the administration of thyroid extract, however, in myxœdematous and allied cases would seem to be sufficiently established and pronounced to justify absolute belief in the potency of this substance as a therapeutic agent. Nevertheless, in his recent very elaborate research, Dr. Cunningham believes that he has demonstrated that the symptoms of thyroidism, so-called, are not produced by any substance which exists originally in the thyroid gland, but that they are the outcome of toxins, ptomains, or other poisonous organic principles, which are the result of post-mortem changes in the gland; and he further affirms that whilst these extracts hasten the death of the dog that has suffered complete thyroidectomy, even feeding such an animal on the fresh thyroid gland fails to put aside sensibly the fatal issue; statements apparently founded upon good experimental evidence, and which certainly tend to befog what we had supposed to be clear knowledge.

"Under such circumstances, I hesitate very much even to report clinical facts bearing upon the subject; nevertheless, four recent cases seem to me to be worthy of being noted, although the happenings may have been coincidences. In these four cases the exhibition of thyroid extract has been followed by violent outbreak of gouty or rheumatic symptoms, not existent at the time at which the drug was given. In one of these cases the patient never had had rheumatic symptoms before to her knowledge. In a second case, that of Mrs. D., the patient was of distinctly gouty tendency, had had from time to time gouty attacks, but was free from any

lithæmic or arthritic symptoms when I first unsuspectingly gave her thyroid extract for obesity. In about ten days or two weeks she had a violent outbreak, confining her to bed. She was taken off the thyroid, put on appropriate treatment, and rather rapidly convalesced. An antilithæmic diet was insisted upon and maintained. April 10th or 11th she began again to take five grains of thyroid extract three times a day, being at that time in greatly improved health and without evidences of diathesis. To-day, April 20th, her sister reports at the office that Mrs. D. is in bed, with great pain and swelling in the ankles as before. Miss M., another case, was a young lady, about sixteen years of age. She had once in her life suffered from slight rheumatic symptoms. She came under treatment for recently developed goitre, dermographia, and various nervous symptoms. About February 22d, she was put upon nine grains a day of extract of thyroid, increased about March 1st to fifteen grains, and decreased March 7th to six grains. March 11th she had a severe rheumatic outbreak. The thyroid extract was withdrawn, a simple tonic given; the rheumatism rapidly disappeared. On March 22d she was again put on thyroid extract, which was followed in about ten days by a return of the rheumatic symptoms.

“My object in reporting these cases is not to claim that the extract of thyroid was the cause of the rheumatic symptoms, but simply to call the attention of the profession to the subject, so that careful observation may be made upon a wider scale.” (*Phila. Med. Journ.*, Vol. I, page 1012.)

Toxins (meaning all the morbid substances produced by living beings) are still receiving attention from critical observers, but few direct comments have been made upon them. One detailed study, however, is worth noting here, and that is a paper by Dr. Alfred Salter of Sudbury, Middlesex county, England, on “The Elimination of Bacterial Toxins by Means of the Skin, with Especial Reference to the Presence of Tuberculin in the Sweat of Phthisical Patients,” in which he draws the following conclusions: “The above experimental evidence seems to me to have a practical bearing upon therapeutics inasmuch as it furnishes a rational basis for the old empirical method of treatment—viz., that of ‘sweating a fever.’ The artificial encouragement of the sweating no doubt assists in the elimination of the toxin by way of the skin, leaving less behind to poison the tissues. I hope in a further communication to detail the results of the experimental examination of the sweat of patients with acute rheumatism,

which I hope will assist in throwing some light upon the nature of the rheumatic toxin." (London *Lancet*, Vol. I for 1898, page 152.)

This was followed by a criticism of the above deductions by Dr. David Walsh of the Western Skin Hospital, London, W., England, under the head of "A Note on the Elimination of Bacterial Toxins by the Skin," in which he states:

"In conclusion it may be as well to add that I do not for a single moment suggest any doubt as to the absolute originality of Dr. Salter's valuable research. So far from that I welcome his contribution as most telling confirmatory evidence in favor of my own views. At the same time I have ventured to make the above comments, as it is desirable for all who undertake a work of this importance to have at least a general acquaintance with the drift of previous writings upon the subject." (London *Lancet*, Vol. I for 1898, page 362.)

Trional (di-ethyl-sulphon-methyl-ethyl-methane), closely allied to sulphonal, is still a close rival to sulphonal and finds its application where the bromides and chloral are less advisable. Dr. Habermann of Wismar, Germany, recommends an agreeable and convenient way of administering it. Finding that trional is readily soluble in water containing carbonic acid under pressure, he made a series of investigations in this line with alkaline waters. He has found that hypnotic effects are produced with much smaller doses when given in this way, and would urge extended trials of this form of administration. A water is selected containing the principal constituents of seltzer, and trional is introduced in the proportion of 1 gramme (15.4 grains) to 330 cc. (a little over 11 fluidounces). Dr. Habermann has obtained very satisfactory results with at least one half and frequently with one third of the ordinary dose, and given in this way would correspond to from 500 to 330 milligrammes (7.7 to 5.5 grains). He was thus not only able to decrease the dose, which is a proper proceeding on general principles, but he found that when given in these small doses rapid elimination occurred and thus disagreeable after-effects were avoided. Again he found that he could prolong his treatment better and thus avoid the cumulative effect which it is known to have. (*Allgm. Med. Central-Zeitung*, Vol. LXVII, page 389.)

Unfortunately poisoning cases are still prevalent. Dr. Fontoy-nont calls attention to the fact that so-called chronic poisoning is much more serious than the acute cases. He notes that such cases

are more frequent in women by reason of their well-known addiction to constipation, which condition is known to favor accumulation of toxic material. He points out the fact that the peculiar empyreumatic odor of the urine in such cases, resembling acetone, is quite pathognomonic. (*La Presse Médicale*, Vol. V, second half, page 307.)

Tuberculin (parataloid) has been considerably talked of and written upon throughout the past year. All the literature, however, has almost entirely been confined to the new tuberculin of Koch (TR). Opinions have differed much and the enthusiastic reception which it received at first has been much dampened by subsequent observations, so that at this date little enthusiasm is noted, except possibly in the immediate neighborhood and among Koch's warm admirers, in his section of the world.

A report was recently circulated to the effect that the manufacture of the new tuberculin had been discontinued, but this was afterwards denied. It is admitted that its distribution has been somewhat restricted, owing largely to this rumor.

At an annual meeting of the Section of Medicine of the British Medical Association held in Edinburgh on July 27, last, Dr. McCall Anderson of Glasgow, Scotland, read a paper entitled "A Plea for the More General Use of Tuberculin by the Profession," in which he concludes as follows:

"It is the almost universal experience of those best qualified to judge that, when employed in suitable cases, and with all due precautions, improvement results from the use of tuberculin. It is, however, the experience of many that this improvement is but too often temporary, the morbid condition relapsing sooner or later after the treatment is stopped. The accuracy of these observations cannot be gainsaid, but it appears to me that sufficient weight has not been given to the circumstance that two factors have to be taken into account in dealing with tuberculous disease: (a) the tubercle bacillus; and (b) the soil favorable to its life and development. It is obvious, then, that in addition to the use of tuberculin, means must be simultaneously taken to change the soil upon which the micro-organism flourishes by means of good food, pure air, cod-liver oil, and other antistrumous remedies, if we would hope to obtain permanently successful results." (*Brit. Med. Journ.*, Vol. II for 1898, page 944.)

Dr. A. C. Klebs of Chicago, Ill., and of Citronelle, Ala., read a paper before the Boston Society for Medical Improvement on December 27th, last, entitled "The Diagnostic and Therapeutic

Value of Tuberculin and Its Derivatives" in which he summarizes his conclusions on tuberculin as follows:

"(1) That tuberculin is a most valuable aid in the diagnosis of early human tuberculosis, with due observation of limitations.

"(2) That there is no danger in its application as a diagnostic test.

"(3) That a tuberculin prepared always after the same method and standardized by previous animal tests should be used in order to insure uniformity of results.

"(4) That the therapeutic value of the crude tuberculin is limited by its injurious by-effects.

"(5) That the method of preparing the new tuberculin of Koch makes it impossible to exclude contamination with other bacteria and therefore renders it dangerous for *therapeutic* purposes.

"(6) That also a non-contaminated preparation of new tuberculin offers the same and even greater dangers in its application as a *remedy*.

"(7) That by elimination of certain toxic substances from any of the tuberculin preparations (or perhaps by their passage through an animal body), a preparation (tuberculocidin) can be obtained, curative properties of which can be demonstrated in animal experiments, and which seems to influence beneficially early cases of pulmonary tuberculosis.

"(8) That we have no remedy and probably never will have a remedy of absolute certainty in tuberculosis in its different stages; and that the eradication of the disease can be successfully attempted only by the united efforts of the different communities; by rigidly enforced methods of prevention; by isolation of already infected cases in well-directed special institutions and by the general education of the public on the subject—in one word, by a sincere fight, like the one now so successfully undertaken in this state of Massachusetts." (*Boston Med. and Surg. Journ.*, Vol. CXXXVIII, pages 121 and 150.)

The discussion which followed is of interest and will be found in the same volume (page 132).

In detecting tuberculosis in cattle, the boards of health in various foreign countries and in some of the states of our own country continue to make good use of this agent. A report comes from New South Wales that they have been making use of it for two years past with great advantage. They admit that it is not infallible, but the percentage of errors when properly used is quite small. They claim that many of the unsatisfactory results pre-

viously reported arise from the disregard of some of the simple details in its use. Most boards of health establish certain rules to be observed and tabulate their records. It is urged that some uniformity in method be secured, so that after a time by comparison of records some precise results as to the value of this method may be obtained.

Dr. Zimmermann has reported the case of a man suffering from so called ocular tuberculosis. Tuberculosis developed in his right eye five years after the enucleation of the left for the same trouble. It was finally established by microscopic examination, that the first eye was so affected, that there was no doubt as to the nature of the disease in the second eye. The new tuberculin was administered beginning with $\frac{1}{500}$ of a milligramme and increased gradually with such favorable results, that he was pronounced "cured." To establish this latter conclusion Dr. Zimmermann made a series of experiments on rabbits, inoculating their eyes with a virulent culture and then injecting the new tuberculin. His experiments as now reported were not complete, but as far as he had gone he concluded that this tuberculin had a real specific anti-tuberculous action. (*Société française d' Ophthalmologie*, Vol. III, new series, page 519.)

In an address on "The Use and Abuse of Internal Remedies in the Treatment of Skin Diseases" delivered at the Annual Meeting of the Reading Pathological Society, October 6, 1898, Mr. Malcolm Morris, Surgeon to the Skin Department of St. Mary's Hospital, London, England, thus alludes to his conclusions on tuberculin:

"Although tuberculin is not in strictness an 'internal remedy,' it still less comes under the head of local treatment. I may, therefore, say a few words about it here. I have given it both in its original and in its improved form (TR), and I am compelled on the whole to report against it. In lupus it undoubtedly modifies the process in a marked degree for a time, but the effect is not lasting. The new tuberculin at first appeared to act like a charm, and I confess I was deeply impressed by the immediate results. But the new tuberculin has already proved as disappointing as the old; in all the cases in which it seemed at one time likely to effect a cure the disease has recurred and their last condition is just as bad as their first. One good effect may, however, be claimed for tuberculin. If used as a preliminary to surgical treatment it modifies the process in some way which I do not profess to explain, but which makes surgery more permanently effectual than it otherwise would be.

"Of the serum treatment as applied to syphilis, leprosy, and one or two other affections I am unable to speak from any experience of my own. I may say, however, that the reports of those who have tried the remedy do not encourage me to follow their example at present." (*Brit. Med. Journ.*, Vol. II for 1898, page 1117.) *

Dr. A. Ravogli of Cincinnati, Ohio, has made a study of this agent in dermatology and read a paper on the subject at the Twenty-third Annual Meeting of Mississippi Valley Medical Association held in Louisville, Ky., in October last. He drew the following conclusions:

"(1) Tuberculin is a valuable aid in dermatology, both as a diagnostic and therapeutic agent. (2) In lupus it acts remarkably well as a systemic treatment, particularly in conjunction with other means for the purpose of reducing infiltrations. (3) After a large number of injections he has never observed any bad effects. (4) Old tuberculin had given more marked reaction, both general and local, than the new. (5) In cases over which no remedy had an influence, tuberculin promptly caused a disappearance of the eruption, healing of the ulcerations, and a general improvement in the condition. (6) If relapses occur after discontinuing the use of tuberculin the remedy should not be blamed. (7) To insure recovery, tuberculin must be used in small doses, administered at short intervals, and employed for a considerable time." (*Medical News*, Vol. LXXI, page 546.)

Dr. von Lingelsheim, working in Prof. E. Behring's Institute for Experimental Therapeutics at Marburg, Prussia, has studied the subject in the line of estimating the strength of tuberculous toxins, and reports his results in a paper entitled "Determination of the Activity of the Tuberculous Toxins." (*Deut. Med. Wochens.*, Vol. XXIV, page 583.)

Oxytuberculin is still being discussed by other observers than the originator, Dr. J. O. Hirschfelder of San Francisco, Cal. The results obtained by some observers were thought so important that a committee of the faculty of the Cooper Medical College made a report on the so-called Hirschfelder treatment and their conclusions were as follows:

"(1) Oxytuberculin prevents the growth of tubercle bacilli in veal bouillon; (2) a positive therapeutic value has been demonstrated for it in the fifteen cases examined, the more clearly as no other treatment was used; (3) no dangerous or untoward effects have resulted from its use; and (4) it has been legitimately

brought before the profession since a full description of its mode of preparation has been published, thereby putting it within the reach of all.

"Finally, the committee feels justified in certifying these facts to the profession to the end that oxytuberculin may be thoroughly tested, the limits of its successful application determined, and its place in therapeutics established at the earliest possible time. While some remarkable results have been obtained in advanced cases, no claims are made for the later stages of the disease." (London *Lancet*, Vol. I for 1898, page 179.)

In a subsequent paper, Dr. Hirschfelder made an additional report, enumerating fourteen cases in clinical detail that were presented to the above committee. (*Jour. Amer. Med. Asso.*, Vol. XXX, page 299.)

Following this paper is one entitled "A Clinical Study of Tuberculous Cases Treated with the New Antiphthisic Serum TR," according to the formula of Fisch, by Dr. A. Mansfield Holmes of Denver, Col., in which he enumerates the clinical results of ten cases, and closes with the following statement:

"The climate alone, in nearly all of the foregoing cases, relieved the symptoms after the patients came to Colorado. The improvement, however, was marked, but not complete, many arriving at a certain point, then cease to improve.

"The climate in such cases exhausts its power, and they either remain apparently stationary or begin to lose ground.

"Hence, I believe that the effects produced upon the majority of the foregoing cases show conclusively that the best means for bringing about continuous and permanent improvement in tuberculous cases, is to be found in the new antiphthisic serum TR, aided by a properly selected climate." (*Journ. Amer. Med. Asso.*, Vol. XXX, page 303.)

Professors F. Raymond and P. Ravaut communicated to the Paris Biological Society on May 28, last, the results of their experiments with a new tuberculin cultivated from the bacillus tuberculosis of fish in a bouillon containing both glucose and glycerin. After filtering these cultures through porcelain, the toxin they obtained exactly resembled the tuberculin obtained from the human bacillus tuberculosis. They experimented with this new toxin in guinea-pigs, proving the above similarity.

The startling statement has been made against Koch's new tuberculin that living tubercle bacilli may be obtained from it. This has astonished many and has not been very fully explained

Many recent reports are unfavorable to the new tuberculin, for it is noticed that the disease often continues unaffected by the injections made. Dr. Hermann Stempel of Greifswald, Prussia, makes such a report (*Muench. Med. Wochensch.*, Vol. XLIV, page 1347), undoubtedly based on reports to this date. The greatest benefit has been derived when used in the treatment of lupus, and most of the enthusiasts obtained their best results in this affection. Dr. Albert Spiegel of Taunus, Germany, has obtained similar results to Dr. Stempel, only considerably more disappointing, for he very definitely states that the improvement noticed was undoubtedly due to the favorable hygienic influences offered to the patients. (*Muench. Med. Wochensch.*, Vol. XLIV, page 1470.)

Doubtful conclusions, also, are reported by Dr. H. Reinhold of Hannover, Germany, in an article entitled "Clinical Experiences with the Therapeutic Employment of the New Tuberculin TR." (*Muench. Med. Wochensch.*, Vol. XLV, page 681.)

Dr. Huber of Berlin, Germany, also concludes from his observations that this agent is neither harmful nor beneficial, and therefore that the results seen at times after its use may well be assigned to the improved hygienic conditions, together with diet.

Uranium Nitrate has not been commented upon much more during the past year than in the year previous. The most prominent article mentioning its use directly was by Dr. C. Hubert Bond of the London County Asylum, Banstead, England, entitled "Remarks upon the Value of Uranium Nitrate in the Control of Glycosuria." (*London Practitioner*, Vol. LXI, page 257.) He enumerates nine cases with a short description of each, and states that they are in addition to the thirty-two previously published cases.

Uranium acetate, in the proportion of about 1 to 10 of distilled water, has been recommended in the treatment of coryza; two or three drops are snuffed up daily.

Urotropin (hexa-methylene-tetramin), formed by the union of formalin and ammonia, is apparently still in use, for reports have been made upon it during the past year.

Dr. J. Cohn, working in Dr. C. Posner's polyclinic in Berlin, Germany, has made observations on the use of this agent in various forms of cystitis, which will be interesting to read for those who desire to follow up this line of treatment. (*Berlin. klin. Wochensch.*, Vol. XXXIV, page 914.)

Dr. Leopold Casper of Berlin, Germany, has continued to make use of it experimentally and clinically. He finds it of much value

in cutting short the attacks of renal colic, and their recurrence is much lessened. The clearing up of the urine is prompt, even though it may have been opaque for many years. It undoubtedly splits up in the system, and formalin is found not only in the urine, but in the blood. He expresses himself very decidedly on its benefits in cystitis. (*Monats. über die Gesammt. auf dem Gebiete der Krankh. der Harn-und Sexual-Apparat.*, Vol. III, page 1.)

Dr. Albert Citron of Berlin, Germany, has gone deeper into the study of this question of the appearance of formalin in the urine, and after investigation concludes, that, although there does appear to be a certain substance appearing in the urine having the chemical properties of formalin, he is in doubt whether it is free formalin. This substance is formed from urotropin by an acid reaction, either in the kidneys or in the bladder, and to produce this reaction, he finds the urine must be kept strongly acid, for it does not take place either in a neutral or alkaline urine. (*Monats. über die Gesammt. auf dem Gebiete der Krankh. der Harn-und Sexual-Apparat.*, Vol. III, page 73.)

The claim by some observers that this agent is efficacious in dissolving calculi in the kidneys or bladder is refuted by others, and a prominent observer who thinks in this way is Dr. Martin Mendelsohn of Berlin, Germany. (*Berlin. klin. Wochensch.*, Vol. XXXV, page 48.)

There seems to be little doubt about the efficiency of this agent when used as a bactericide and urinary antiseptic, for all the observers, apparently, are in accord in reporting considerable satisfaction. Dr. Edmund Bonn of Prag-Weinberge, Bohemia, reports having used sodium salicylate, benzoic acid, salol, and other agents, each of which completely failed him; but when using infusions of 1 to 2 grammes (15.4 to 30.9 grains) of this agent, he obtained much better results. (*Prag. Medicin. Wochensch.*, Vol. XXIII, page 208.)

Validol is the name given to a combination (mixture) of valerianic acid and menthol, introduced as a stomachic and stimulant remedy, and exhibiting properties of much value in cases of hysteria. It has been used and strongly recommended by Dr. Georg Schwersenski of Berlin, Germany. (*Therap. Monatsh.*, Vol. XI, page 604.) It is claimed to contain 30 per cent. of menthol, and is offered in the form of a colorless, slightly bitter liquid, of the consistency of glycerin, and with a slight, but pleasant, odor. It apparently is useful in all cases where menthol is applicable. The

usual doses recommended are from ten to fifteen drops on a piece of sugar when internal medication is indicated for all forms of flatulency and hysteria. In cases of neuralgia and sciatica, it may be applied topically by painting on the affected region. It has been used effectively also by inhalation.

Weights and Measures (metric system) have advanced very markedly during the past year, by reason of the progressive legislative act of the British government, and their adoption in the new British pharmacopœia. Parliament has thus authorized the use of the decimal system in a progressive way to the same extent as our United States government has. Both countries, therefore, are on an equal footing in regard to the change in the system, although the English government are much behind in their authorization of its use, for the United States congress passed the progressive act in July, 1866. The pharmaceutical and chemical journals of England have taken hold of the matter in a rational way by stating that in future they propose to state all the quantities mentioned in their reading matter in terms of the metric system, giving equivalents where thought necessary and proper. They make use of the table of equivalents given in the United States pharmacopœia, but naturally their fluid measures in the old system differ from those in this country, so that their equivalents in volume differ slightly. It is strongly recommended, now, that the most practical mode to proceed with in this new system is to immediately secure weights and measures in that system, and learn to not only use these appliances mechanically, but to think in the new system, only making use of the equivalents when necessary to convert from time to time. If the conversions are to be used every time a weight or measure is mentioned, there will be much loss of time, and the liability to inaccuracies increased.

The various consuls of those countries not now using the metric system are constantly advising their home government of the uselessness and expense of exporters forwarding trade circulars, catalogues, and price lists, calculated in their individual systems, to foreign countries using the metric system. The latter countries are so well satisfied with the wisdom of the change they made, some of them long ago, that trade is actually discouraged to some extent with those countries who have not yet fallen into line.

As alluded to in previous years, Russia has been leading up to this change for some years, and has been adopting various means to facilitate the overthrow of the old system at some fixed date. It is now reported that the minister of finance has obtained

imperial authority to make definite preliminary arrangements for the accomplishment of this change.

In Turkey, even, the proposal to permit the use of this system alongside of their present one is now being seriously considered.

Xeroform (tri-brom-phenol bismuth), another substitute for iodoform, has not been commented upon quite as much in the past year as previously, but it is still thought considerably of in some quarters. Dr. Heinrich Paschkis claims it to be of much value in the treatment of certain skin affections. He has written a somewhat extended paper upon its use. (*Wien. klin. Rundschau*, Vol. XI, page 693.) He enumerates in tabular form sixty-two cases of venereal ulcer, five cases of herpes, six cases of eczema, five cases of ulcer of the leg, and four of burns, in all of which he obtained excellent results. Superficial ulcers and erosions healed up in a very few days. He lays little claim to any antiseptic action of this agent, but thinks it a remarkably effective dressing, favoring healthy granulation and cicatrization.

Dr. Hermann Metall of Vienna, Austria, lends his testimony to the good results obtained with this agent in various forms of venereal diseases. (*Wien. Med. Presse*, Vol. XXXVIII, page 1214.)

Dr. Ehrmann of Vienna, Austria, reports his continued use both internally and externally in his dermatological clinic for over a year, stating that he finds it one of the best and most reliable of the antiseptics externally, and equally efficient throughout the intestinal tract. (*Wien. Medizin. Blätter*, Vol. XXI, page 343.)

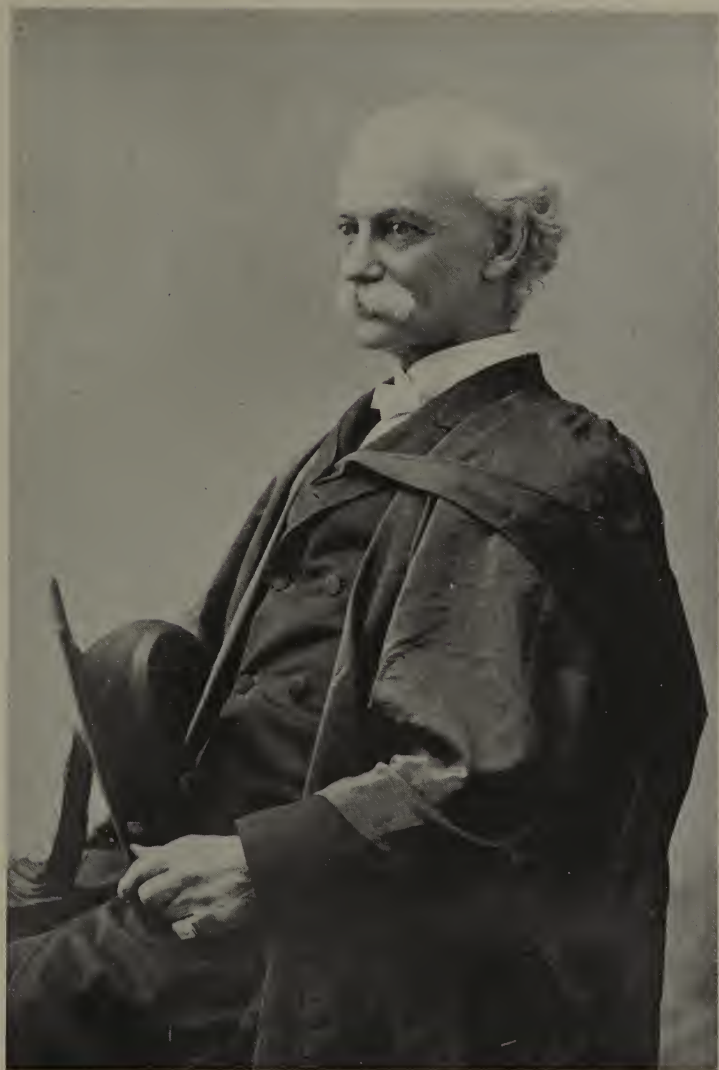
Dr. Marcinowski of Siegmarsdorf, Germany, reports his preference for this agent over iodoform in the treatment of corneal ulcers. He turned his attention in the direction of xeroform, after having succeeded in a case which had, previously, given poor results with iodoform, and has since used the former almost entirely, with quite uniformly good results. He reports that all his wounds heal rapidly, leaving no scars. (*Therap. Monats.*, Vol. XII, page 385.)

MEMOIR OF PROFESSOR JOHN CRONYN.

By DR. J. C. HANNAN, of Rensselaer County.

An unbidden duty falls to my lot to-day and, paradoxical as it may appear, I am urged by two forces, a sorrow and a pleasure, at the same time. The first a feeling of profound regret for the loss of a dear friend and a member of this Association; the second to elucidate some prominent virtues in his beautiful life as far as I have known them. I wish I had the ability as I have the heart and the will to do justice to one whose demise brings sadness to our circle, moving us down to the very depths of feeling. A link has been broken in the chain of our mutual friendship and coöperation that cannot easily be replaced.

As I cast my eyes around this assemblage it seems as if I must see a venerable, conspicuous figure in his accustomed place in this hall, but I look in vain! That uncompromising tyrant, before whom sooner or later we must all bow, touched the warm, generous heart with icy fingers, and the well-springs of his earthly life were frozen within him! Never again will he grace our meetings with his kindly presence, his counsel, or his sympathy. O Death! thou art indeed a strange, unfathomable mystery, a mighty conqueror in this world of strife and vainglorious ambition! Thou art apparently destitute of all accommodation or reciprocity of feeling! Thou goest forth in thy march of destruction neither giving nor taking quarter! No chieftain of the forest ever feathered a better arrow or took surer aim! Thou hast met and defeated the greatest naval and military heroes the world has ever seen, and then laughed in horrid mockery at their attempted resistance! Impervious and cruel are thy mandates, O king of terrors, and from thy decisions there is no appeal! Compassion, oh, gloomy potentate, is not a trait of thine, for in thee there is no heart, no kindly impulse. The shrieks of the widow, the cries of the fatherless, the prayers and pleadings of the friends and companions of thy victims, fall upon thine ears like the sobs of the roaring sea as it dashes against the beetling rocks of its desolate shore! Thy mystic veil invests the forms of our loved ones, and



PROF. JOHN CRONYN.

they are hidden from our eyes forever! I believe thee a true democrat, for there is nothing partial in thy gruesome work. The king on his throne is to thee as the beggar in his rags,—the helpless babe in his cradle fares the same as the octogenarian who leans upon his staff! The hero of a hundred fights and the coward who runs away from his own shadow; the philanthropist and the miser; the philosopher who tries to solve the mysteries of nature and the fool who in his hallucinations builds a railroad to the moon, are all alike to thee!

Great moral teachers and those who have made the world better than they found it fall helpless, Great Reaper, before the sweep of thy matchless sickle! All the earth must acknowledge thy supremacy and pay tribute to thy merciless sceptre with their lives! Methinks I see thee now in mental vision looking at me through hollow orbits, and thy grinning teeth admonish me to hold my peace! Thy smile sardonic makes me tremble! Thy cold, vapid but significant countenance chills my better nature, and from out my soul, thou mocking effigy of the living, I hate thee! Thou hast robbed us of one whose life work was meritorious and kind. Thou mayest hold his mortal remains in thy cold embrace for a time, but his gentle spirit we cannot but hope has taken flight to a higher and holier assemblage than this earth of ours could bring together, to a home where pain or sorrow can never enter, and disappointments are unknown! Gone where the perfected souls of good men mingle with those celestial beings whose chief delight consists in ministering before the great white throne of the Almighty Father!

If it is true that Death loves a shining mark, then the old, gloomy, cadaverous warrior never found a brighter one than our late lamented brother, Dr. John Cronyn, who departed this life, after a short illness, on the 11th day of last February, at his home in Buffalo. I have been informed that the cause of his death was pneumonia, following paralysis. I glean from the same source that he was born in Ireland, Dec. 22, 1825; that he came to Canada in 1837, and passed his medical examination at Toronto in 1850. Being a stanch Catholic and a patriotic Irishman, he could not and would not subscribe to the thirty-nine articles of the English church, which debarred him from obtaining his degree, and he was obliged to go before a local examining board, which admitted him to practice. This odious test oath of Anglo-Saxon civilization could not live long in close proximity to freedom on this side of the St. Lawrence, and the obnoxious law was soon

afterwards repealed, when he received his diploma in due form, and his thesis gained him the Chancellor's prize.

He then went to Fort Erie, where he successfully practised his profession for several years, besides filling several public offices with tact and ability. Not satisfied with a mediocrity, he aimed at a higher plane of usefulness, and in 1859 removed to Buffalo, where he permanently located. His keen eye discovered a great future for that city and he made up his mind to do all he could for the advancement of his profession and make Buffalo, if possible, a leading medical centre. As a contributor to so worthy an object, he laid his plans and submitted them to the faculty of Niagara College—suffice it to say they were accepted, and Dr. Cronyn was chosen president of the medical department. A curriculum was drawn up, professors appointed, and another impetus was given to the progress of medical science in that progressive city. He worked hard to make this new venture a success, and accomplished his purpose.

In recognition of his indefatigable zeal the university conferred its highest honors upon him. He was on the staff of the Sisters' Hospital some thirty-five years and chief up to the time of his death. He was also a director of the Buffalo State Hospital, a member of the American Medical Association, a member and founder of this Association, and its president in 1888.

I was first attracted to Dr. Cronyn by the suavity of his manner and the dignity of his general bearing. He seemed to be a master of the finer elements of social life, modest, approachable, and friendly. He cultivated no severe formality or self-preëminence, for he despised snobbery as he disliked conceit. Sincerity was his motto; truth, his polar star. To his honor be it recorded that during his long and varied professional life he could raise his hands, pure and fresh, above the dome of his intellect, and declare before the eyes of the sanctified on high that they were never sullied by the unnatural and damning sins of which, I am sorry to say, many of our otherwise glorious profession are guilty. He loved his chosen calling on account of its usefulness to suffering humanity and not as a mercenary avocation to aggrandize and plunder the unfortunate to which, I fear, too many of the parchment are addicted.

Nothing annoyed him more than rudeness of speech or manner, and particularly in a physician. He carried the idea that rational beings should act in conformity with the rules of propriety dictated by polite usage and common sense. Hence he turned his face

against all vulgarity, as being offensive and intolated. His own mind being pure, he could not understand the insalubrious in others. Dr. Cronyn was truly a religious man, as well as a representative physician. He was born and brought up in the Catholic faith, the fundamental principles of which he looked upon as the most perfect and the most desirable of all forms of Christian teaching, but notwithstanding a firm belief in his own creed, and that the church was divinely founded, he was ever tolerant, respecting the sincerity of his neighbors in their views. He claimed the Christian religion to be the best system of ethics ever devised for the moral and spiritual regeneration of mankind, and the precepts of the church the best and surest rules of action to follow in a world where serious irregularities of human conduct confront us at every step. Such precepts form silent monitors ever ready to guide us through all the intricacies of a capricious world, to a higher and holier plane of rectitude than can be found elsewhere. His ideas of the deity were sublime and inspiring, and his aspirations after heavenly things lifted him up to regions pure and exalted, where the poisonous vapors of unbelief could not reach. He had no love for the Philosophies of pagan antiquity, the Rationalism of Germany, the Deism of England, the Infidelity of Paris, or their abettors here in our own favored land where, I regret to say, wild schemes of intellectual progress and eccentricities of thought are largely cultivated. He preferred the Apostles Creed and the exegesis of the fathers of the church to the cosmogonies of Homer or the theory of Brahma's Golden Egg; the narrative of the Bible was dearer to his heart than all the idle fancies of naturalists, from Thales down to Herbert Spencer. He preferred the doctrine of the eternity of God with St. Gregory and St. Thomas, than the eternity of matter with Voltaire and Vogt. He could better understand the creation of man according to Moses, than accept the teaching of Darwin, who, perhaps, has without sinister intention degraded the dignity of our nature by his "Origin of the Species." The beautiful conception of the Adamic creation is far superior and more to our liking than the Simian theory of Darwin, or the Moneron Hackelü of Huxley, the late high priest of modern unbelief. All the efforts of infidels to blot from our hearts and minds the Supreme Being, and to supplant Him with a heap of inert matter, were, in Dr. Cronyn's eyes, monstrous. He never looked with favor on self-constituted authority, particularly in religious matters or moral reforms, on account of the weakness and fallibility of man. Hence his aversion to radicalism, socialism,

and confusion of all kinds; and for atheism, nihilism, and fatalism he had a special horror.

A few years ago a Fellow of this Association presented a paper in which he displayed some rank infidelity. Dr. Cronyn gave him a look of disdain, mingled with pity, as much as to say, "Young man, you may have a fair share of medical knowledge, but your interpretation of religious truth is a very poor attempt at the higher criticism, and we will have to put you down as a second Dr. Pangloss——!" When the session closed, our friend went to the secretary and asked that said paper have no place in the printed transactions, and the request was granted.

While attending the national meeting at Detroit, the Doctor introduced me to a distinguished surgeon of Buffalo, as follows: "Professor M., allow me to introduce Dr. Hannan of Hoosac Falls." "Dr. Hannan," said the surgeon, "I am very glad to know you, for you must be a good man to be the friend of Professor Cronyn, whom I know so well. He and I do not think alike on many subjects, particularly the religious question. I am an unbeliever in Christian dogma and all other religious theories, but I am always ready to take my hat off to my friend Cronyn for the sincerity of his belief and its practical evidence in his daily walk and conversation. I would consider myself a happy man if I could look at things he calls spiritual in the same light as he does, and if there is a place in the future reserved for faithful souls, I am positive Dr. Cronyn will inhabit that happy abode." This eulogy was too much for my friend's humility, and he said, "Never mind him, Doctor, if I were not sure of his nationality, I would put him down as a Corkonian who had often visited Blarney Castle."

After I returned from Europe, in 1890, I found him as usual here at our meeting, and he invited me to lunch. While we were discussing the good things set before us, he asked me how I liked Berlin. I related some of my adventures there, and among them mentioned Professor Virchow, and the pleasure it afforded me to meet so famous a man. To my surprise he replied sharply, "I don't like him!" "Why?" I asked. "Ah," he answered, "he is an atheist and holds that instead of a Creator the process of life, both in its beginning and repetition, must be referred to a special kind of mechanics."

He took a deep interest in national as well as local affairs, and manifested great zeal in the rapid growth and prosperity of the city of his choice, its educational and industrial advancement, but particularly its refining and moral influences. He was of the ner-

vous, sanguine temperament, which gave him self-reliance and strength of character; he was quick to perceive and quick to act. He was opposed to selfish schemes, whether in the state, the church, or the Temple of Æsculapius. Not that he objected to improvements projected on correct lines, but because of the many impositions practised in the name of progress. He was never captivated by appearances, nor trapped by polished phrases that presented only a semblance of truth. He believed in results, and it was his habit to reduce theories to a practice before accepting the principle involved. By this process he maintained his equilibrium, and was never carried down the popular current to be wrecked on the rocks and reefs of error. He stuck to the haven of safety under all circumstances.

When the New Code heresy had broken out in this state with the plausible and popular sentiments of liberal thought and freedom of action and all the blandishments of soft and cunning argument, he viewed them all with the prism of truth and logic, and soon found the sly germ of self-interest lurking in the superficial textures of the intent to enrich the New Code larder! He observed the utilitarian phraseology with which its advocates decked out that impudent harlot, but, like an X-ray, his keen eye saw the ribs of death beneath the gaudy tinsel. To his mind that movement was a medical impiety, and a sad commentary on those educated and accomplished physicians who had sacrificed both principle and honor upon the altar of Mammon to propitiate a false god in Gotham as the chiefs of the Ammonites did to Moloch in the valley of Tophet! "What do you think of the new movement, Doctor?" was the question asked him one day. He answered, "To me it is like mixing oil with water or truth with error. Why, Sir," he continued, "it is a will-o-the-wisp, a phantom of the imagination. No philosopher or sage from Aristotle to Baron Von Humboldt, in all their magnificent powers of intellect, could explain the potency of one dose of the 32d dilution! It is not only a riddle of the Sphinx, but a greater mystery than the epicycles of the Milky Way! The system, if it can with any degree of propriety be called a system, is not only false in principle, but useless in practice; it is an outrage on the harmonies of natural law and subversive of the active and benign condition of existing things, the opposite of reason and impossible of experiment, of all vanities the most vain, of all absurdities the most absurd! It controverts manifest truth, and is repugnant to the commonest sort of common sense!"

Peace to your ashes, my noble friend; the tide of corruption or

sordid gain could never rise higher than the soles of your shoes; money could not purchase your integrity, and flattery fell upon your manhood like water on the plover's wing! No dulcet sound could tempt you to turn aside from the path of duty and honor, or lull your imagination into a false security where your honor as a man, and your duty as a physician were at stake!

With such leading traits of character, one would naturally suppose him to be austere and rigid in his associations, but it was not so, for those who knew him best will bear testimony to his kindly nature. He was free from those sordid characteristics which govern small hearts and narrow minds; he was charming in his friendships, generous to a fault, and took the greatest kind of pleasure in making others happy. At home or abroad Dr. Cronyn was the gentleman, and I have been credibly informed that it was in his home life that he showed to greatest advantage, that his presence was a benediction to his family.

I shall never forget the day he was made President of this Association. He came to me, his face as radiant as a sunbeam, and asked if I knew he was President for the coming year. I answered "Yes, and allow me, my dear Doctor, to congratulate you; we could not find a better man," and I will now add that the honor was never bestowed upon a more grateful one. He expected no such compliment, as he thought the old leaven of caste and religion were against him, but happily such was not the case, thanks to the liberality of the council having charge of the matter. He repaid them for their courtesy, as he performed the duties of his office with satisfaction, and they honored themselves by honoring him.

It would be difficult to enumerate the quiet virtues of this good man. He was a fine representative of the gentleman of the old school, a class, by the by, becoming nearly extinct. Genial in his intercourse with the sick, he treated all alike, both rich and poor, so that his presence acted as a panacea to their infirmities. He never spoke for effect or aimed to obtrude himself upon public favor. The success he attained in his profession never intoxicated him with vanity or filled him with ideas of his own importance. The more he knew, the humbler he became. *Requiescat in pace* our lamented friend, and may the great Physician of souls repay you for your kindly acts towards the suffering poor of earth! Those of us who have known you intimately shall not forget you, but your memory will remain fresh and green in our hearts until we, too, shall pass to that bourne from whence no traveler returns.



JOHN GILBERT TRUAX, M. D.

MEMOIR OF JOHN GILBERT TRUAX, M. D.

By DR. JOHN SHRADY of New York County.

Dr. John Gilbert Truax was born at Durhamville, Oneida county, N. Y., on the 5th day of March, 1848, and died in New York city, February 16, 1898. His father was Henry Philip Truax, and his mother Sarah Ann, a sister of the late Chauncey Shaffer, who was at one time quite a prominent member of the New York bar. His emigrant ancestor, Phillippe du Trieux, a Walloon, was born in 1585, and was in New Amsterdam during the administration of Gov. Peter Minuit in 1624-'29. This Phillippe was court messenger in 1638, and two years later received a patent for land in the Smit's Vly. Phillippe's wife was Susanne de Chiney, and three of his daughters married respectively Isaac de Forest, Everett Janse Wendell, and Dirk Janse de Groot. Phillippe's son Isaac moved to what was then Albany county, and was one of the first settlers of that part of the state. The doctor's grandfather, Henry D. Truax, was born on the old family place, about seven miles from Schenectady.

Dr. Truax was educated in the common and select schools in Durhamville. He also attended the Oneida Seminary in the village of Oneida. He taught school for a while in Wisconsin, and attended Michigan University at Ann Arbor, but was not graduated from that institution. Shortly after receiving his diploma from the Rush Medical College in 1871, he went up to Marquette, Mich., to fill an appointment as physician and surgeon to the Kloman mine. He remained there until 1876, when he settled in Harlem, N. Y., and became the member of a colony in which many memories of old New York still lingered. Here he became known as a public-spirited citizen and a wise sanitarian. Here, too, he was content to abide, in the enjoyment of many privileges which money could not buy.

Dr. Truax was without a double, a man with far-sighted gifts; to some incomprehensible, but in the main as one to be trusted for his singleness of purpose and unconventional loyalty. His manner was frank and his methods were as direct as his standards were high, and his life-work indeed may be said to have borne a better

review in the mass than in detail. There was a breadth to his efforts, somewhat cramped by frequent interruptions, but all conceded a most constant diligence. His was the talent of the supervisor less the vigilance of the routine workman. With a discontent for half-way measures, and possessed of a disposition somewhat robust in manifestation, what wonder that at times he imperiously required tasks for which his good nature afterwards apologized. Not a merciless critic, he could overlook flaws when the structure loomed up in its fullest grandeur. His considerate tenderness and scorn of subterfuges disarmed unseemly antagonisms, and brought into relief his sterling honesty. He forgave as he expected to be forgiven. Among the downtrodden was his favorite work, for they would hear his sonorous voice without quailing, and submit without murmuring to his rapid decisions. He never despised the crowd, but rather enjoyed the pranks which won the unearned drink or indifferent bed. Nevertheless, as to the issues after which all struggle with more or less futility, he was not insensible—he might even bow to the plaudit without caring to pick up the coin, but naturally expected a little ceremony with the gift. The world said that he was sometimes haughty, and so also betrayed its own sense of reprisals for small favors. In figure and manner Dr. Truax recalled the pictures and stories of Samuel Johnson, but without the suggestions of boorishness. He had the same scorn of subterfuges, but much more of the kindness belonging to one “lifting his voice in the wilderness.” With him there was more cheer for the struggle against odds, with infinitely less vituperation.

“In the sick room, by the bedside of a patient,” writes the Hon. Charles N. Morgan, “his manner was peculiarly gentle and his voice always took on tones of added tenderness. His bearing and confident skill gave to the invalid courage, while the combination diffused among all the fullest trust. He was unquestionably no half-way friend, for though he might yield his confidence slowly, when given it was in the most ample sense, without reserve. Further, may not all agree that he was true to himself and just to others?”

As an all-around man, Dr. Truax was supreme in the rôle of a superintendent. Think not that with his independent demeanor, regardless of details, he slurred his work, or that he was indifferent to the supreme issues for which all struggle with more or less futility. Those who knew him the best answer in protesting denials. He once confided to the writer a moody conviction that

his "life was to be brief, and that therefore his work must need be furious. After all, when in the retrospect," continued he, "what matters the length of the road when the journey is over?" With a masterful courage he kept close watch upon his symptoms, and gave to them an interpretation which might have been mercifully withheld from others. He was a stern judge of probabilities in affairs as well as in maladies, so that even after a defeat there always came a delightful cynicism as a declaration of his disappointment. With him prognosis and prophecy were convertible terms. Candor, mellowed by a deal of experience, virtually possessed him, although there was never a sting in his sententious rebukes, and he lived just long enough to learn that with such drawbacks he was winning both confidence and respect. A certain approach to the ideals of the robust virtues gained by severe training, with scarcely the stimulus of a plaudit, was, in truth, a reward all too meagre for his worth; but it needs must satisfy, although it could never support his amiable pleasures or allow the needed rest from his cheerfully assumed duties.

Although the offices he rendered the government in the difficult department of pensions were more than thorough and above all innuendoes, the recompense was much too trivial for the personal sacrifice. Had he been in the field, he would at least have had an "honorable mention."

Dr. Truax virtually devoted himself to the Harlem Hospital while he materially benefited the Mott Memorial Hall, and gave valuable aid to the library of the New York State Medical Association.

Among his deepest gratitudes was the appreciation which his counsels commanded. Here his services, in consonance with his inborn sense of responsibility, were never perfunctory, for in all his undertakings his heart was in his work.

Many cannot but recall his "Welcomes" at the October meetings of this last body, the terse papers read by him, and his stoical expositions of renal disease, with himself as the subject. How brave was he in discarding fallacies, and how resigned when, without a tremor, he said during the waning of his life: "What matters the sentence when the evidence is all against you? Why care for the summons, when the rest is soon to be yours? I know too well that I am facing my doom."

Our friend, with the Brahmin's doctrine that destiny simply extends the wand and with the story of many drudgeries denied even the incident of a single opportunity for recognition, has gone

like a vision expanding the retrospect. An Ian MacLaren, perchance, may limn a composite picture of an ideal practitioner, but not so with the multitude that only regards the concrete. Glory, indeed, like poverty, is subject to infinitesimal divisions, and often unfair distributions. Praise, after all, seldom tingles the ears that hear, and eulogies are heard in the main amid tombstones. The living crowd contents itself with the exclamation, "He was only one of many, and but did his duty!"

MEMOIR OF WILLIAM HENRY THAYER, A. B., M. D.

By DR. R. M. WYCKOFF.

Our honored and well-beloved associate, Dr. Thayer, departed this life on December 22, 1897, at Lanesboro, Mass. His membership in this Association began as an Original Fellow in 1884. His residence in Brooklyn extended from 1866 to 1892.

He was born in Milton, Mass., on June 18, 1822. His early education was pursued at Chauncey Hall School, under his father, Mr. Gideon Thayer, the founder of that school. He became a member of the class of 1841 of Harvard University, taking his A. B. in regular course.

He then studied medicine under the guidance of the eminent Dr. Henry C. Bowditch of Boston for three years, and received his M. D. degree from the Harvard Medical School in 1844. He was an *interne* of the Massachusetts General Hospital during his student period.

For about ten years he practised medicine at Boston and at Newton Centre, Mass. During his practice in Boston, from 1844 to 1849, he was physician to the Boston Dispensary, was connected with the Massachusetts General Hospital, as an attending physician, from 1846 to 1849, and also with the Boylston Medical School as an instructor in medicine. He was professor of Theory and Practice of Medicine in the Vermont Medical College at Woodstock in 1854-'55, and in the Berkshire Medical Institute at Pittsfield, Mass., from 1859-'63. In 1861 he, with Dr. R. Cresson Stiles, edited the *Berkshire Medical Journal*.

From 1854 to 1862 he resided at Keene, N. H. He was a member of the State Medical societies of Massachusetts, New Hampshire, and Vermont, and he was a surgeon in the Fourteenth N. H. Volunteers from 1862 to 1865, and medical director of New York (with the latter as an honorary member in 1870), the Second Division of the Nineteenth Army Corps in 1865, having been mustered out in July, 1865. It was subsequent to that date, or early in 1866, that the best years of his life work, so far as it had relation to our own city (Brooklyn), and to our own circles in medical

activity, began. With us he continued in great usefulness as a practitioner and exemplary citizen for nearly thirty years. With us he built up an excellent general and (toward the latter part) consultant practice among people of refinement and influence.

During the cholera epidemic of 1866 he was for a time the physician in charge to the Cholera Hospital at the corner of Hamilton avenue and Van Brunt street in Brooklyn, which did duty in the southern district of the city from July 22 to Sept. 6. The twelfth ward had more than one third of all the cases in that year, a fact which with others that might be mentioned, entailed extraordinary and critical responsibilities upon Dr. Thayer as head of the staff of that hospital. He discharged his duties with eminent credit to himself. His report upon that arduous service is to be found on pages 150 to 154 of the Metropolitan Board of Health Report for 1866. He was connected with that board as an assistant sanitary inspector from 1866 to 1870. I do not find that he connected himself with any Brooklyn hospital or dispensary. He early joined the Medical Society of Kings County, in 1866, filling various offices therein from 1867 to 1878, and holding its presidency in 1872-'73. In 1869 or 1870, he with his long-time friend and associate in teaching, Dr. R. C. Stiles, and nine others, laid the foundation of that useful and important scientific organization, the Brooklyn Pathological Society. In this venture, feeble at the outset, he was greatly interested, was frequent in his attendance and participation in the discussions. Respecting his many contributions to medical literature and his affiliations with medical bodies, which were very numerous, I am enabled through the courtesy of Dr. William Schroeder, to supply very complete lists, which are appended to this note.

In 1892 he was obliged to give up the practice of his profession on account of deafness and removed to Lanesboro where two of his daughters had their home. There he spent the last years of his life in the enjoyment of an outdoor life, and of the company of his children and grandchildren. His life in the Berkshire Hills of Massachusetts was one of serenity and repose, but those five years were active, cheery, and fruitful to their close.

The portal through which death's processional has filed in 1897, has opened to few choicer spirits than our long-time friend and honorary associate. He came of a cultured and refined strain of New England stock, such as that about which his former teacher and friend, Dr. Holmes, delighted to discourse and to illustrate. Dr. Thayer's father was an instructor of high repute, and our

friend was all his life long a student, a professor during several years, and with a readiness to impart of his knowledge and learning to others during all his years. Dr. Thayer's mind was of fine fibre, his was a warm and friendly temperament, with high ideals, seeking ever the best, and with a devotion to principle and a firmness not always so clearly manifested among the refined and scholarly of our profession.

I will close this note by quoting briefly from an estimate of our deceased Fellow's worth, by one of his most valued friends: "Dr. Thayer was a good physician. He was thoroughly educated for the work of his profession and devoting himself to it with untiring zeal, jealous of its honor, regarding it as a sacred trust, proud of its illustrious names and great examples, grateful for the opportunities it furnished him to serve his fellow-men. Yet the professional relation with him tended almost inevitably to become a personal and friendly one. There is no calling that so makes for friendship as that of the physician, but our friend was exceptional among physicians in the degree to which he grappled his patients to his heart. It was hard to imagine how he could have been more engrossed in his profession than he was; yet he was not made selfish by his engrossment, nor careless of domestic ties, nor indifferent to literature and art, nor unmindful of his duties as a citizen. In all these particulars he was remarkable for the fulness of his life. I have known no other man of such a uniformly cheerful disposition. He saw the bright side of everything that had a bright side, the silver lining to every cloud. The severest trial that his optimism ever encountered was a chronic deafness, which obliged him to abandon his profession. Worse, if possible, was its curtailment of his social satisfactions. For a long time he kept on hoping against hope, but when the inevitable could not be escaped, he adapted himself to it with a wonderful patience and sweetness, and well-nigh convinced himself that his misfortune brought him more of gain than loss, a country life all the year round, and the daily satisfaction and delight of having his children and their children close about him. He had hosts of friends. To hear him speak of them was to feel the human world better and more kind. To hear them speak of him was to be astonished and delighted that any man could be loved so much and by so many. His name was like a password admitting many, who, but for that, were strangers, into immediate and vital sympathy. Their love for him united them in a delightful fellowship which had its orders and degrees, but, even for the outer planets of the sys-

tem, counted much. I could not easily exaggerate my sense of the good influences that have irradiated from this happy life.

Membership in Medical Societies.

- 1844—Massachusetts Medical Society.
- 1845—Medical Improvement Society, Boston.
- 1845—Suffolk District Society, Massachusetts.
- 1846—Medical Observation Society, Boston.
- 1855—Vermont Medical Society.
- 1857—New Hampshire Society, Massachusetts.
- 1860—Connecticut Valley Society, Massachusetts.
- 1859—Berkshire District Society, Massachusetts.
- 1870—Honorary Member Medical Society of New York.
- 1887—Honorary Member Kings County Medical Association.
- 1884—New York State Medical Association.
- 1870—Brooklyn Pathological Society—one of the organizers.
- 1850—Delegate American Medical Association.
- 1860—Permanent Member American Medical Association.
- 1870—New York Physicians Mutual Aid Association.
- 1866—Medical Society of Kings County, New York; censor, 1867; orator, 1869; librarian, 1878; president, 1872-'73; delegate to the A. M. A., 1872.

Subjects of Medical Papers.

- 1861—Edited with Dr. R. C. Stiles, *The Berkshire Medical Journal*.
- 1885—Report on Cholera, Medical Society of Kings County.
- 1886—History of Malarial Fevers in Brooklyn.
- 1890—Fatty Heart.
- 1872—Inaugural Address, President Medical Society of Kings' County.
- 1874—Carbonic Acid and its Fatal Effects.
- 1885—Umbilical Hæmorrhage.
- 1885—Chronic Catarrhal Gastritis.
- 1892—Errors in Ventilation.
- 1897—Veratrum Viride in Puerperal Convulsions.

MEMOIR OF WILLIAM H. ROBB, M. D., OF AMSTERDAM, N. Y.

By S. H. FRENCH, M. D.

Dr. William H. Robb was born in the town of Florida, Montgomery County, N. Y., July 1, 1843. He was educated at the Fergusonville Academy in Delaware County; the seminary in Middletown, Saratoga County; the Saratoga High School, and the Amsterdam Academy, from which he graduated in 1862. After teaching school one year, he commenced the study of medicine with Dr. Jacob G. Snell of Amsterdam, April 1, 1863. He graduated from the Albany Medical College in December, 1865, and on January 1, 1866, commenced the practice of medicine in partnership with his preceptor, Dr. Snell. This partnership continued until 1873, since which time Dr. Robb practised alone, with the exception of three years (1880-'83), when he was associated with Dr. Stover.

Dr. Robb became a member of the county medical society in 1886, and continued an active member until his death. He was a member of the Amsterdam Medical Society, and the American Medical Association, and was one of the founders of the New York State Medical Association, and always took an active interest in the meetings of the Association. Dr. Robb left Amsterdam in apparently robust health to attend the annual meeting of the Association in 1897. He took with him a nearly finished paper he was to read at the meeting, with the intention of finishing it in New York City, but was suddenly taken dangerously ill; after being in a hospital a few weeks he came home, expecting to soon recover his strength and health, and resume his work. Not improving as fast as he expected, he went to Selma, Ala., where he died, January 12, 1898.

Dr. Robb was the most prominent physician and surgeon that ever practised in Amsterdam, and he honestly earned his prominence and success by unremitting hard work and enthusiastic devotion to his profession. Being endowed with more than ordinary mental and physical ability, his capacity for work was enor-

mous, and his enthusiasm and love of his profession knew no bounds. Naturally an optimist, he carried his breezy hopefulness into the sick-room, and inspired courage and confidence in his ability wherever he went. His presence was tonic to his patients, and his words were always full of hope and cheer.

As a citizen Dr. Robb attained to more prominence than most physicians. He was the most active and prominent of the three physicians who commenced the agitation for public water-works, which resulted in a system unexcelled in this country. No sooner was the system of water-works installed, than he led the other physicians in an agitation for sewers, with a successful result. He was one of the original projectors of our city hospital, and always took an active interest in its affairs. Largely to his efforts we owe the successful existence of our free public library, and he was president of the association at the time of his death. In all works of true philanthropy he was always ready to lend his time and influence, and contribute liberally of his means.

MEMOIR OF J. R. VANDERVEER, M. D.

Dr. John Rutgert Vanderveer was born on April 21, 1829, at his mother's home, the Van Alst homestead, in Newtown, Queens County, N. Y. He was brought up at the Vanderveer Homestead, Flatbush (now part of Brooklyn), which is almost the oldest house there at this date. He attended the Flatbush Academy during boyhood and later the medical department of the New York University, from which he graduated in 1852. He practised in Astoria, Long Island, for one year, and then settled in Hanson Place, Brooklyn (1853). From there he moved to Lafayette avenue, then to Washington avenue, and finally, in the spring of 1864, to 301 Carlton avenue—all in Brooklyn—where he resided until October, 1892. Then he retired from practice and removed to Monroe, Orange County, N. Y. During the early years of his residence at Carlton avenue, Brooklyn, he went weekly to Newport and Providence, R. I., where he had an office practice, devoting his attention specially to diseases of women.

Soon after his graduation he married Harriet Glover of Brooklyn, who survives him. He had four children, all now living: George G. Vanderveer of Ellsworth, Kansas; Mrs. Nathaniel Hathaway of New Bedford, Mass.; John C. Vanderveer, M. D., of Monroe, N. Y.; Mrs. Albert Anderson of Monroe, N. Y.

He joined the Medical Society of Kings County in 1874, the New York State Medical Association in 1887, and was one of the founders of the Kings County Medical Association in the latter year. He was the honored treasurer of this local association from its formation until he left Brooklyn, when he was elected an honorary member.

He had been failing for some months before his death and his family began to realize that a general break-up was in progress. He continued his regular visits from his home in Monroe to Brooklyn to attend his old patients and families who still clung to him, until late in June, last, when he paid a visit to his oldest daughter, Mrs. Nathaniel Hathaway, at her summer residence in New Suffolk on Long Island. While there, early in July, he had a slight stroke of paralysis, from which he soon rallied, and was taken

back to Monroe on July 21st. He quickly regained the use of his hands and legs, although his walk was evidently slower than it previously had been. His family noticed that his mind was still clear on all past subjects, but as days passed on his mind began to act in a sluggish manner and it seemed difficult for him to grasp subjects which were told him in ordinary conversation. He was able to get out of doors and looked forward with pleasure and interest to the approaching annual meeting of the New York State Medical Association, to be held the coming October. Little further marked change occurred, except this gradual decline, until the latter part of September. On Thursday, September 22d, he appeared to be unusually bright. He walked out, as was customary, to the post-office and seemed to be rather more like himself, as of old. He had his son, Dr. J. C. Vanderveer, and family, spending the day with him. He resumed his customary habit of relating stories of the past, which all who knew him well were fond of listening to. The following day, however, he appeared very tired, and after supper that night found trouble in expressing his mind clearly on any subject he would introduce. He was induced to retire early and soon fell asleep quietly. At midnight he had another stroke of paralysis, and when his attending physician reached him he was quite unconscious. It is said he never roused again, but slept quietly until the early morning of September 27 (1898), when he passed away without a sound. Naturally the departure was a shock to the family, though they had felt that the end would be in a short time. They were much relieved to see that he passed away so quietly and without pain. The funeral services were held at his home in Monroe, and the interment took place in the family plot in Greenwood.

He was a quiet, retiring man of the old Dutch stock, and all who knew him well highly respected him. All his patients greatly honored him and put the utmost confidence in his judgment. He was rather of the old school of practice, and was more inclined to give good common-sense advice than to prescribe medicaments. He may not have had a large circle of intimate friends, but he had few enemies, for he was rarely aggressive, though a very firm believer in the right. He would never go out of his way to give offense, but would not countenance wrong. He was a striking example to the rising generation in his profession.

MEMOIR OF CHARLES SAMUEL WARD, M. D.

By EVELYN L. BISSELL, M. D., New Haven, Conn.

Dr. Charles Samuel Ward, formerly of New York City, died at his home in Park street, Bridgeport, Conn., on July 31st, aged 56 years.

He was the son of Dr. Charles Samuel Ward and Lucinda J. Taggart, who moved in the early forties to Rushville, Ill. He was born October 28, 1842.

His father was a practising physician for many years in New York City, and his son inherited a taste for the same profession. His father dying when he was a child, and his mother being left with three other children, she removed to New Haven, Conn., placing them in the Everest's Episcopal Academy, Hamden, Conn., where they remained until 1857 or 1858. The subject of this sketch entered the Yale Medical College in 1861, and graduated with high honors in January, 1863. He was a brother of Dr. George Augustus Ward of New Haven, Conn., who thirty years ago or more went to Peru, South America, in the employ of Henry Meiggs, a noted contractor of the Aroya Railroad, who subsequently died at Cerro de Pasco, Peru, in 1882; and of H. Crosswell Ward, who thirty years ago was a prominent member of the "New Haven Grays." Another brother survives him, Dr. Edward S. Ward, who is connected with the Panama Canal Company. His mother also survives him. One of the characteristics of the deceased was his tender devotion for, and care of, his mother, with whom he had lived since he took up his residence in Bridgeport.

On the breaking out of the Civil War, Dr. Ward, in 1862, was appointed a medical cadet in the United States Army, and assigned to the general military hospital at Fortress Monroe, Va., where he remained until nearly the close of the war. He showed the highest executive ability in furnishing medical and hospital supplies to the different hospitals in the department, as well as superintending the assignment of the large number of prisoners of war, who were exchanged from Libby Prison and other prison pens.

After the war he settled in New York and practised medicine from 1868 to 1891. He was for a time clinical associate to Dr.

T. Gaillard Thomas and he afterward became a partner of Dr. John F. Metcalf of New York, until his giving up practice in 1891. He had a wide experience as a gynecological surgeon and a doctor of medicine, and his opinions were highly valued by his brothers in the medical profession. While actively engaged in practice Dr. Ward had one of the largest clientels in New York from 1873 to 1885. In addition to his large private practice he was assistant surgeon to the Lying-in-Asylum, New York Woman's Hospital; consulting physician to St. Luke's Hospital, N. Y., also to the Manhattan Hospital from 1885 to 1891. He was a member of the County Society, Obstetrical Society, Practitioners' Society, New York County Medical Association, and St. Nicholas Society of New York. He was frequently called from New York by practitioners in other cities who desired his advice in the treatment of serious cases.

Dr. Ward was possessed of a lineage which is traceable back for several centuries. Two of his ancestors, Sir Richard de Clowe, Earl of Hertford, and Sir Simone de Warde, formed part of the conclave of the great barons who signed the Magna Charta at Runnymede, June 19, 1215. Dr. Ward did effective work in organizing the society known as the Barons of Runnymede, which is now in a flourishing condition. He recently presented to the Bridgeport public library a valuable work on the Magna Charta Barons.

He was seventh in descent from Andrew Ward of Garleston, Suffolk county, England, who came to New England with Gov. John Winthrop in 1630, one of the commission appointed by the general court of Massachusetts Bay Colony to govern the people of Connecticut in 1636, one of the magistrates who there first asserted the sovereignty of the Colony by the formal declaration of war against the nation of the Pequots, May 1, 1637, a purchaser and founder of Stamford, Conn., 1640, and who died in Fairfield, Conn., 1659. He was the progenitor of a long line of men high in the councils of the state and nation, in the military and naval service and of men eminent in letters, commerce, and the arts. He was eighth in descent from Governor William Bradford, who came over in the *Mayflower* in 1620; ninth in descent from Governor John Haynes, Massachusetts; ninth in descent from Major-General Robert Sedgwick; fifth in descent from Lieut.-Col. John Hubbard, and fourth in descent from Col. Leverett Hubbard; eighth in descent from Thomas Crigson, who founded the colony of New Haven in 1638.

Dr. Ward died from cerebral hæmorrhage. Last winter (November, 1897) he was stricken with acute nephritis and for a number of months was in a critical condition. He recovered and was apparently in his usual health until Thursday (July 28, 1898), when he was attacked with vertigo. He rallied from this and until the following Saturday, his condition being hopeful, and early in the evening he slept quietly; upon awakening he seemed brighter and soon fell into a peaceful slumber from which he never awakened. Throughout Saturday night and Sunday he was unconscious until shortly after 10 p. m., when life departed. He was attended by Dr. Cowell of Bridgeport.

Dr. Ward was married June 30, 1873, his wife being Julia Marion Tuttle, daughter of the Rev. Isaac H. Tuttle, D. D. (and Sarah Parmelee Beecher of New Haven, Conn.), for many years rector of St. Luke's Episcopal Church, Hudson street, New York, and Rector Emeritus St. Luke's new church (at time of his death). Mrs. Ward's death occurred August 21, 1874. Their only child, Edith, died October 21, 1880. Both bodies were brought to New Haven, Conn., for interment in the family lot in the historic Grove Street Cemetery.

Dr. Ward was one of the committee on the Louisburg, Cape Breton, Memorial, to commemorate the capture of Louisburg, June 17, 1745, also one of the committee of the Connecticut branch of the Society of Colonial Wars, to erect a tablet to the Regicides, at Judge's Cave, West Rochpoint, in 1897.

The Ward family has been one of social and aristocratic prominence for many years, and resided for a long time (three generations) on Water street, New Haven, Conn., in one of the first-class old houses built by a great-grandfather in the days when many wealthy people resided on that street. They were also prominent members of Trinity Church, one of the oldest Episcopal churches in New England. He had many warm personal friends in New Haven and elsewhere, among them Charles Trowbridge, cashier of the Merchants bank, New Haven, and treasurer of the Society of Colonial Wars, and the writer. Dr. Ward retained a fondness for old associations, old friends, and was a frequent visitor to his old home, even when the cares of professional duty required his constant attention elsewhere. Personally to meet him was a pleasure; cultured and polished, his manner was exceedingly kindly. His record, like his life, was without blemish. He was an educated gentleman and a genial companion whose manly qualities of head and heart endeared him to many by the strongest ties of

companionship, and the pleasures of social life, of sound judgment, of great self-reliance and keen sense of justice gained for him the highest esteem of all who knew him ; a man whose purposes were high and “ who has left the world better than he found it.”

MEMOIR OF FRANK G. SEAMAN, M. D.

By ELIAS LESTER, M. D., of Seneca County.

Death, always solemn, is rarely more startling and impressive than when a distinguished and faithful physician, a prominent man in the community, is suddenly stricken down. The village of Seneca Falls, N. Y., was shocked by the announcement, on Tuesday, July 19, of the death of Dr. F. G. Seaman. Possessing a fine physical development, unusual strength and fine form, it was difficult to realize how such a man could not recover; but his familiar figure was never more to be seen among us.

Dr. Seaman was born in Fairfield, Herkimer County, N. Y., Sept. 5, 1860, his parents being James and Elizabeth Seaman. His education was obtained in the public schools of his native town, and at Fairfield Seminary, where he graduated in 1878. Soon after his graduation he went to Albany, and under the direction of Dr. John Swinburne, of the Albany Medical College, he pursued his course of medical studies, and received his degree of Doctor of Medicine, March 2, 1881. He came to Seneca Falls in September thereafter, and entered upon the practice of his profession. He was quite young, being hardly twenty-one years of age, but with his fine physique and dignified appearance, looked much older. It was not long before he had established a good practice, and won the confidence and esteem of the community.

He joined the Seneca County Medical Association in 1882, and served many years as treasurer, and was elected its president in 1887. He was also an early member of the New York State Medical Association, and in 1896 was chosen secretary, which made him president of the third district branch, and his address on the occasion of its next meeting in Auburn, N. Y., was a paper well worthy of being preserved in the archives of the Association. He held a place in the executive committee of the Association, and was active and keenly alive to everything relating to the progress of medicine and to the welfare of the Association.

He was also a member of the American Medical Association, and met with it on many occasions at Newport, R. I., Washington, D. C., and Philadelphia.

Dr. Seaman never married; he lived with his mother, who was a widow, till 1895, when she passed away, and after that a widowed sister came to keep his house and make a pleasant home for him.

Possessing a mind of excellent power, quick, clear judgment, and an agreeable address, he progressed rapidly in his successful career as a physician, and became known to all our people, and there were few men who possessed more completely the confidence of their patients than he did, and few who will be more widely missed or more sincerely mourned.

But it was his social qualities which made him so popular in the community; he always had a smile for his friends, a good story or some pleasant incident, and his hearty laugh would resound, and every one about him was happy. Open, generous, a good, free liver, he liked to live and his friends liked to have him, and be with him, at the club or on fishing excursions, of which sport he was very fond, and was known around most of the lakes in the Adirondacks as a good fisherman and a royal good fellow.

About two years before his death he had la grippe, and he was forced to go to a warmer climate to get relief; he went by sea to old Mexico, visited all the old cities of that country, and spent some time in the City of Mexico. On his return he seemed much better, but his tendency to take on flesh, which for some years had been increasing, rendered him short of breath and made it difficult for him to do his business on foot; so he kept constantly to his carriage, taking very little exercise, and accumulated flesh till he was prostrated with an attack which resembled disease of the heart from fatty degeneration.

I did not see him, being out of town at the time, but Dr. Ely, of Rochester, I understood, gave such a diagnosis. He recovered somewhat from this attack, and after a few weeks was out again; he did not resume business much, but visited his friends, walked as much as he was able, dieted, and looked quite himself again. But the night of the 17th of July was a severe and dangerous one; he became insensible, and no one knew he was in a dangerous condition till he passed away forever.

Dr. Seaman was honorable in his professional intercourse; he aspersed none in his profession, and was singularly free from the petty jealousies and unprofessional criticisms that too often lessen public respect for men of our profession. His reputation was without stain, and his memory will be cherished by all within the profession and in the community as long as it be willing to pay tribute to manhood and intelligence, going hand in hand with all the qualities that make men esteemed and loved.

Dr. Seaman is survived by his two sisters, Mrs. Marion Smith of Geneva, and Mrs. Ella J. Ellwood of Seneca Falls.

MEMOIR OF SAMUEL H. McILROY, M. D.

By JOHN SHRADY, M. D., of New York County.

Dr. Samuel Henderson McIlroy, born June 21, 1839, in Scotland, Franklin County, Penn., died at 330 Alexander avenue, New York City, January 5, 1898. He came of fighting stock, his grandfather having seen service in the War of the Revolution, and his father in that of 1812. The sword worn by his immediate ancestor as one of the defenders of Baltimore, Md., is still an heirloom in the possession of the doctor's sister, Miss Martha A. McIlroy of Chambersburg, Pa.

Doctor McIlroy, before the Civil War, joined Campbell's "Flying Artillery" of the last named town, and in militia circles long maintained a reputation as a rifle shot. With these traditions and surroundings, his entrance into the 126th Regiment, Pennsylvania Volunteer Infantry, was an easy sequence. The period of his enlistment was for nine months, dating from August, 1862. In the latter part of October, 1862, he was detailed to the United States General Hospital, Camp B, Frederick City, Md., as an assistant in the Dispensary, for the duties of which he was sufficiently qualified by reason of an experience as a junior apothecary while a student of medicine. In March, 1863, he began a like service in the Convalescent Hospital at Baltimore, Md., where he remained until May 20, 1863, the date of the regimental muster-out. With an unexceptional modesty, he claimed participation in only one battle, that of Gettysburg. During the following year, having received his diploma from the Long Island College Hospital, he entered upon another phase of his medico-military career, that of Acting Assistant Surgeon, U. S. A., at the Willett's Point Hospital, Fort Schuyler, N. Y., where he remained up to the spring of 1866. Soon after he began practice at what was then Mott Haven, a straggling village above the Harlem Bridge, New York City, but now euphoniously lost in the Borough of the Bronx.

Dr. McIlroy's ancestors were long-lived, and mainly of Scotch-Irish extraction. His father was married to Abigail Blythe, January 8, 1818, he being in his forty-fifth, and his bride in her twentieth, year. The former died in 1855, aged eighty-one years, but

the latter attained to nearly ninety-three years. To this couple were born eleven children, of whom the doctor was the tenth, the survivor of five sons.

Our unassuming associate had a bias for hero-worship added to certain preferences for the dogmas of former preceptors, but none could accuse him of servility in accepting aught without question. He never omitted applying his own tests. Both leading and following thus constituted characteristics in unexpected union, rare but not impossible. Logical as well, with a certain contempt for trivialities, he was seldom content, especially with inferences by concealed approaches, and accordingly he would pursue a topic until the small hours of the morning, with the consolation that perhaps even completeness might not be essential to usefulness. A certain honesty of purpose was a universally conceded trait, and at the last inspired the many tributes to his worth on the occasion of the services over his remains. It was the truth indeed which imparted both warmth and color. None of the great concourse could gainsay the eloquence of the unadorned narrative of his sterling virtues.

Not at all a mammon worshipper, he yet by way of compensation often bewailed his acts of misplaced trust in motives, and consequently did much penance by way of self-denial. But from these unlearnings there were many relapses and many returns to old genialities, since it was not among his belongings to cherish animosities. Thus, despite significant warnings, which he cared not to closely question, the while slowly parting with his strength and ambitions, he uncomplainingly lent his aid without heed of reward, and cared for the sake of others not to add calamity to misfortune. Besides these desirable attractions, he had in his soul a subdued humor which in the sick-room was never disassociated from his stately figure with its flowing beard. As the unpretentious physician of the home, unappalled by rapidly growing specialties, he came with a smile and invariably left with an encouragement. In medical and fraternal circles his absence therefore suggested a dreary loneliness—more properly a solitude. As an intimate remarked, his was a life of placid friendships.

Withal, it may be truly said that he lived worthy of the opportunities found within a pastoral suburb silently but steadily growing into a mart of keenest competition. So, an optimist becomingly without the world's wealth or power, having contentedly responded to his environments, he yet abides in many memories as a conscientious adviser, an accepted chief in the confidences of

not a few, tolerant in his professional relations, and to the end regretted that well deserving though he was he had not yet attained the fruition of his deserts. To him was denied the silver locks, the patriarchal chair, and the grand sunset, but not the kind offices of kindred and friends. As with his clan he was of the yeomanry, and when the night came he also, when his allotted work was done, went to his rest amid benedictions. A widow, a son, and two daughters, indeed, mourn his loss, but he himself has gone beyond sorrow, for did he not fall a toiler before the harvest home? Let moans not words be his eulogy.

REPORTS OF THE DISTRICT BRANCHES.

FIRST DISTRICT BRANCH.

The annual meeting of the First District Branch of the New York State Medical Association was held at the Grivar House, Little Falls, N. Y., July 20, 1898.

The following papers were read:

"Fatigue," Dr. W. D. Garlock of Little Falls.

"Practical Experience in Asepsis and Antisepsis in Obstetric Practice," Dr. Douglas Ayres of Fort Plain, president of the State Association.

"Dystocia in Middle-Aged Primipara, with Report of Cases," Dr. A. B. Santry of Little Falls.

"Conservative Surgery in Crushing Injuries, with Report of Cases," Dr. J. T. Hunt of Utica.

There was a good attendance, and the papers were all thoroughly discussed.

The meeting was adjourned at 5 p. m., subject to the call of the vice-president and secretary.

EDGAR H. DOUGLAS,
Secretary.

SECOND DISTRICT BRANCH.

The fourteenth annual meeting of the Second District Branch was held in Troy, N. Y., June 30, 1898.

The president, C. E. Fritts, in the chair.

The Address of Welcome was delivered by Dr. Wm. Finder.

The president's address, "Dermoid Cysts," was interesting to all.

Dr. D. C. Moriarta read a well-prepared paper on "A Case of Empyema Complicating the Puerperium." Remarks were made by Drs. E. D. Ferguson and H. C. Gordinere.

Dr. Robert Selden read a very interesting paper on "Ovarian Dropsy." Remarks were made by Drs. E. D. Ferguson and A. T. Van Vranken.

A well-prepared and very interesting paper on "Operative Cure of Inguinal Hernia in Men" was read by Dr. E. D. Ferguson. Remarks by Drs. Finder, Seymour, and Moriarta.

Two interesting papers by Dr. Wm. W. Seymour on (a) "Gallstone Surgery: Remarks Based on Twenty-one Operations with but One Death;" (b) "Treatment of Prolapse of Uterus." Remarks by Dr. E. D. Ferguson.

Dr. Wm. Finder read a paper on "Changes Produced by Cancer in Blood Cells."

Dr. W. C. Crombie read a very interesting paper on "A Rare Case of Skin Disease."

Thirty-six members registered.

The old officers were elected to serve for another year.

On motion of Dr. Seymour, "That officers of this Association take steps to form an association in this state to be known as the Mutual Defense Association for the Protection of the Medical Association," the same was passed.

The meeting adjourned till the last Thursday in June, 1899, to meet at Hudson, N. Y.

JOSEPH E. BAYNES,
Secretary.

THIRD DISTRICT BRANCH.

The fourteenth annual meeting of the Third District Branch of New York State Medical Association was called to order at 10:40 a. m., June 2, 1898, by the president, Dr. H. W. Carpenter, of Oneida, N. Y. The meeting was held in the rooms of the Academy of Medicine, at Syracuse, N. Y.

The minutes of the last meeting were read and approved.

A letter of regret was read from Dr. H. O. Jewett, Cortland, N. Y.

The committee of arrangements reported through its chairman, Dr. R. Aberdein, of Syracuse.

The president's address was read. Subject, "Venesection."

Dr. F. W. Higgins read a paper on "Senility."

Remarks by Dr. E. D. Ferguson, Troy, N. Y.

Dr. F. H. Wiggin read a paper, "Malignant Disease of the Uterus, with Especial Reference to its Early Diagnosis." He claimed that we should not wait for pathology to determine absolutely the malignancy of uterine disease, since it would then be frequently too late to operate successfully.

In discussion, Dr. H. L. Elsner called the attention of the medical men to this subject, since it was by them most often that the diagnosis and the necessity for surgical interference must be determined.

Dr. Ferguson said that the microscope was not infallible in the diagnosis of malignancy, and we should not be guided by it alone.

Dr. A. B. Miller of Syracuse emphasized certain points of the paper.

Dr. Henry O. Marcy, of Boston, read a paper on the "Surgical Treatment of Uterine Myoma."

The points especially brought out were that the removal of uterine myomata is not much more dangerous than that of ovarian cystoma. He explained his method of covering the stump by peritoneum, and emphasized the importance of making a peritoneal covering for all raw surfaces. Myomectomy may be done in many cases, but not in all. The vaginal method is not recommended when it is blind surgery.

In discussion, Dr. A. B. Miller stated that we can save many more of these cases now than formerly.

Luncheon was served at 12:30, and the afternoon session was called to order at 1:45 p. m.

The report of the nominating committee was read and adopted. The next place of meeting will be Elmira; secretary, Dr. C. L. Squire of Elmira. The executive committee is to remain unchanged.

Dr. Ely Van de Warker gave a verbal report of a "Case of Extra-Uterine Pregnancy Operated on at Term." It was a very interesting and complicated case. At the beginning of the operation it had the appearance of a bicornate uterus. It was opened high, in order to avoid the placenta. Formalin was used in the after-treatment to harden the retained placenta, and to avoid sepsis.

Dr. Stephen Smith of New York city presented a paper on "The Growth of the Dispensary System of Medical Relief in New York State." He said that this question was now the most important one to the profession in New York city, and also to the profession at large. The objections to the present management were that there was no supervision or control by any authority. The dispensaries often occupied poor buildings, used poor drugs, and the danger of infection in the waiting-rooms was great; that many were organized where they were not needed, with insufficient accommodations, apparently for the benefit of the physicians who were in attendance.

The recommendations to remedy these defects were to put the whole matter under the control of the State Board of Charities. This would avoid the dispensary tramp, and the pauperizing of the common people.

Dr. F. H. Wiggin, who has been interested in the attempt to secure state legislation on the subject, continued the discussion, giving the present status.

A resolution was introduced on the subject by Dr. Ely Van de Warker and carried:

Resolved, That the Third District Branch of the New York State Medical Association sympathizes with the efforts of the New York County Medical Association and the State Board of Charities to secure suitable legislation to control the charitable dispensaries, and to suppress the abuses which may now exist in the free relief of the sick poor, and that we, as a society and as individuals, will do all in our power to promote legislation to this end.

Dr. E. D. Ferguson presented an enterolith, having a nucleus with a definite history of being swallowed only three weeks before.

He then presented the subject of "Papilloma of the Bladder," illustrated with specimens which he had removed. These tumors consist of epithelial tissue, with a large increase of the blood vessels. One tumor was as large as the fist, giving rise to alarming hæmorrhage during the operation.

Dr. H. O. Marcey had operated on one tumor as large as an egg by ligating it, thus avoiding the hæmorrhage.

Dr. Stephen Smith, in such a case, had done a suprapubic cystotomy with good results.

Dr. N. Jacobsen had operated on such a case five years ago by Thompson's forceps and the Paquelin cautery, with permanent cure.

Dr. N. Jacobsen read a paper on "Diagnosis and Surgical Treatment of Renal Calculus." Differential diagnosis is to distinguish from appendicitis, neuralgia of the ureter, and hæmorrhage without calculus.

The indications for nephrectomy or for nephrotomy were given. Discussion of the paper by Dr. Ferguson.

A vote of thanks was given to the committee of arrangements for the luncheon provided, and to the Academy of Medicine for the use of their pleasant rooms.

Forty members and guests were present.

Meeting adjourned at 4:45 p. m.

F. W. HIGGINS,
Secretary.

FOURTH DISTRICT BRANCH.

The fourteenth annual meeting was held at the Iroquois Hotel, Buffalo, Tuesday, May 10, 1898.

The meeting was called to order by President C. C. Frederick, at 11 a. m.

The minutes of the previous meeting were read and approved.

The treasurer presented his annual report.

Upon motion of Dr. Stockton, the president appointed the following auditing committee: Drs. Stockton, Strong, Townsend.

The report of the treasurer was approved by the auditing committee.

The president then delivered the annual address, upon the subject, "The Necessity of Early Diagnosis in Malignant Disease of the Female Genitalia."

Dr. Jones moved that Dr. Ullman be invited to attend the meeting and take part in the discussion. It was so ordered by the president.

Dr. Allen A. Jones presented a paper on "Syphilitic Gastralgia."

The president invited all physicians present, who were not members of the Association, to take part in the discussion of papers.

Dr. Jones's paper was discussed by Drs. Rochester, Benedict, and Stockton.

"Report of a Case of Pulmonary Tuberculosis, with Remarks on Treatment," was read by Dr. DeLancey Rochester.

Dr. Rochester's paper was discussed by Drs. Jones, W. D. Greene, Stockton and Benedict, and the discussion was closed by Dr. Rochester.

Dr. C. G. Stockton presented a paper on the subject "A Case of Recurrent Lobar Pneumonia."

The paper was discussed by Drs. Rochester, Jones, and Ullman.

Dr. A. L. Benedict presented "Report of Case of Cancer of the Stomach, and Presentation of Specimen."

The paper was discussed by Drs. Ullman and Jones.

The following executive committee was elected for the ensuing year :

B. C. Wakely, M. D., Alleghany County.
S. J. Mudge, M. D., Cattaraugus County.
P. D. Strong, M. D., Chautauqua County.
DeLancey Rochester, M. D., Erie County.
M. W. Townsend, M. D., Genesee County.
R. J. Menzie, M. D., Livingstone County.
E. M. Moore, Jr., M. D., Monroe County.
W. Q. Huggins, M. D., Niagara County.
F. R. Bentley, M. D., Ontario County.
J. H. Taylor, M. D., Orleans County.
C. S. Parkhill, M. D., Steuben County.
Darwin Colvin, M. D., Wayne County.
A. G. Ellinwood, M. D., Wyoming County.
Wm. Oliver, M. D., Yates County.

C. C. FREDERICK, *President.*

WM. H. THORNTON, *Secretary.*

FIFTH DISTRICT BRANCH.

The fourteenth annual meeting of the Branch was held at 315 Washington St., Brooklyn, on Tuesday, May 24, 1898.

The morning session was called to order by the president, Dr. N. W. Leighton, at 11:30 a. m.

The secretary read the minutes of the last meeting, which were approved as read.

The president announced that he had appointed Drs. Ruggles and Biggam to act with the secretary as registration committee.

The report of the committee of arrangements was read and accepted:

REPORT OF THE COMMITTEE OF ARRANGEMENTS FOR THE ANNUAL MEETING, 1898.

In extending you a hearty welcome, the committee would report that no change was called for in the previous satisfactory arrangements made by your committee of last year. Last year's meeting was acknowledged to be so satisfactory in all the details, that no improvements in such arrangements were even suggested.

Respectfully submitted,

(Signed) J. D. RUSHMORE, *Chairman*.
W. H. BIGGAM.
T. M. LLOYD.
ADOLPH WIEBER.
R. M. WYCKOFF.

The president then read his address on "The Physician and His Profession."

PRESIDENT'S ADDRESS.

When nearing my graduation-period one of my preceptors asked, in relation to locating for practice, whether I would choose to be a small toad in a large pool or a large toad in a small pool. I told him my preference was for the former. Borrowing his figure of speech, I find myself at the present time a small toad in a large pool and in deeper water than I am accustomed to swim; therefore I ask my Fellows of the Branch to have compassion on me and help me to the shore.

On an occasion like this—the annual meeting—it is expected

of your President, not so much that he shall offer thanksgiving and praise for what has been accomplished, as that he shall point out the necessity for fortifications to strengthen our cause and indicate the direction in which to advance our lines to a loftier plane of usefulness. I have, therefore, chosen for my theme, *The Physician and His Profession*, and will venture the axiom that whosoever thinks most highly of his profession will by his profession be most highly honored.

In a voyage of forty years' duration any man's log-book ought to contain some observations useful to a younger mariner. Since assuming office my uppermost thought has been what to do or say for the good of the younger members of the profession. When the medical graduate comes forth from his college, filled to overflow with scientific facts and theories and possibly with the thought that he is the latest edition and up to date, he is likely to become despondent at the slowness with which his talents receive recognition; and if he is dependent on what he collects from his practice, he will often become embarrassed. At such a time the temptation to lower the standard of professional ethics is very great. Just then, a word of sympathy, an exhortation to stand firm, may result in much good to the man and to his profession. I feel a measure of sympathy for the owner of every new sign I read, and think of the time when mine was new. I wish we could inaugurate the practice of calling on every new member who locates among us, and promise him our counsel and brotherly support, and assure him that he is warmly welcomed into the fraternity and into social fellowship. We may not be able to transfer a patient to him, but we can point out the legitimate ways of securing practice and warn him against methods that will bring reproach upon the profession and sorrow to himself. He should not be discouraged by intimation that he must go hungry till one dies to make room for him, but be encouraged to exercise strict economy rather than deviate from the professional path. It is reported of Sir Andrew Clark that he told his pupils he spent the first twelve years of practice in earning his bread, his second twelve years in earning his bread and butter, and not until the third twelve years could he indulge in luxuries.

One of the first temptations that confronted me in the beginning of my professional career was the solicitation of several druggists to send prescriptions to them and I would receive a liberal percentage. When I resented this as an insult to my profession, I was told that all druggists gave a percentage and that all doctors

received it. The statement was false, as might be expected from such a source, yet it was practised enough to make it a temptation to a young man. The first truss maker that supplied a patient for me sent me four dollars in a letter, stating that it was my commission on the sale. Although I needed the four dollars, and much more, I returned it, courteously informing him my patient would pay me for my services; but that if he did not, the dignity of my profession forbade me accepting a commission. Other instrument makers have done the same, with a similar result.

Another temptation is the solicitation of an endorsement of some new remedy, the name of which is legion. One may think that it is a good and legitimate advertisement for himself, as well as for the manufacturer, but it brings regret. Many physicians of high professional standing, now among the departed, would fain have withdrawn their names from public gaze which were placed there by an unguarded act of fancied benefit to the public. (Here let me give my conviction in parentheses, that of the so-called elegant preparations put up in wine and syrup, only a small percentage would be effective if deprived of the wine or alcohol and the sugar. Is it wise or economic to encourage the free use of such compounds, when, if medicine is needed, the official remedies, already proved, can be obtained without paying 75 per cent. over their value toward the manufacturer's advertising account?)

It is a greater task to qualify as a family physician than it is to obtain the medical degree; and it is the established family physician who should voluntarily and cheerfully instruct his juniors. They should be treated as if they were sons or junior brothers, for they are the rightful inheritors of our work. We owe it to our patrons to provide them with competent successors. One of the most difficult problems to solve is the proper management of a patient's friends when the patient is so sick as to tax all the physician's resources. In such a dilemma the young practitioner should have free intercourse with a senior, and receive gratuitous advice when a consultation in the sick-room cannot be obtained. The young physician who relies wholly on his scientific knowledge and fails to study the various phases of human nature and to seek to please as well as to cure, will find a steep ascent to prosperity. It is said of a clergyman, that when asked the comparative merits of his two sons, who were also in the ministry, answered that "John made the most display in his show-window, while George carried the largest stock in his store." A certain degree of display in the show-window is essential to success, however

large the stock in store, and in the display one may be tempted to unorthodox or nonethical methods, and thereby incur the displeasure of his brother practitioners. The desire to obtain eminence in the profession is commendable, and the claim to originality of thought may be justifiable, but to assert priority of ideas is boldness that may not pass unchallenged. Not long ago I was selecting an instrument, when the salesman handed me one, remarking, "Here is one made for Dr. X; it is his own invention; do you know Dr. X?" "Yes," I said, "I know him very well; please give him my compliments, and tell him that I have an instrument like it which was made about thirty years ago, and I obtained the design from a *Surgery* published about forty years ago." One of the lamentable conditions of our profession is its polity, or, rather, lack of polity. I know of no other organization or body of men whose interest suffers so much by want of unity and harmony and of concert of action as does the medical profession. There are unions and societies in every branch of trade and labor, which exercise a power in self-protection. Base-ball clubs, theatre troupes, ministerial gatherings, Freemason orders, and every variety of political organization, all obtain lower rates of travel than can be obtained by medical associations. Why is it? There must be some reason. A few years ago the school teachers of Brooklyn sought and obtained the signatures of nearly every physician in favor of prolonging the summer vacation for a week or more. I told the teacher who asked me to sign the petition that the signatures of all the physicians in Brooklyn would avail nothing; but if she could get the support of "The Rag-Pickers' Association" she might expect success, and gave her the reason, namely, that twice, under two different administrations, the mayor and common council of Brooklyn had enacted an ordinance forbidding the use of bells by the rag-pickers, and each time, after a few weeks of prohibition, the act was repealed or notice given not to enforce it. I honor the rag-pickers for their cohesion and perseverance, though I would like to stop their discordant noises. Why is it that the medical profession possesses no such power? I should add that the school-teachers' petition was laid on the table by the board of education, the leading opponent remarking, "You can get doctors to sign anything."

What has pained me most in all my medical career has been to see the lack of cordiality and sympathy among physicians. It does not comport with our courtesy to the public, or our charity to the needy, or our efforts to alleviate the sufferings of humanity.

All suits for malpractice that I am cognizant of have been either prompted by a brother practitioner or encouraged by his silence. This ought not to be. Even one with whom we cannot intimately fraternize should receive our protection and support against a suit. I believe I have several times prevented the prosecution of surgeons when called upon to examine the result of their services, and in cases in which I had no personal acquaintance with them. I wish it might become an established practice for each to give something toward bearing the expenses of a brother physician involved in a malpractice suit. I believe such a course, coupled with words of sympathy to the injured and a frown of scorn to the injurer, would terminate the abuse. In order to cultivate charity and cordiality within our ranks, more respect for individual opinions and more forgiveness for wrongs committed should be practised.

There are some men of talent and ability with whom one cannot affiliate, without overlooking their eccentricities and forgiving their discourtesies. If science and the profession can be benefited by them let us try by gentleness and persuasion to keep them within the professional traces. Many years ago a professional brother was telling me about the ill-treatment Dr. D had shown to Drs. A, B, C, and himself. I said that Dr. D had always treated me kindly. With more emphasis than elegance of language he replied, "Must a dog bite *you* before you believe that he bites?" "No," I answered, "but even some vicious dogs can be conquered by kind treatment." Some years ago I was called in haste to see a patient whose physician had been summoned but had not arrived. She was about to send word to him that he need not come, but I told her no, that I would care for her till he came and then retire. When his arrival was announced I retired from the sick-room to one adjoining and sent word that I would like to speak with him. I heard the answer, and noted the tone in which it was given, that if I wanted to see him for anything to come where he was. I choked down the insult, walked into the sick-room, offered my hand, which was accepted and shaken, then I explained the situation and took leave. We have continued friendly and courteous ever since.

Ian Maclaren says in purport, concerning forgiveness, if you are sure you have been correctly informed, sure you have been wilfully injured, sure you have in no way given provocation, "then let me entreat you to forgive, *that you may escape the curse of an unforgiving temper.*" "He who thinks kindly of his enemy gathers a quick reward into his own bosom."

Selfishness, envy, jealousy,—a triple poison,—seem to have attacked our profession, like an infection; propagated in the colleges, proliferated in hospitals and dispensaries, it has diffused its contagion through medical societies and to private practitioners. Is there no help for this? Is there no antidote? Would another Darwinian evolution of man eradicate the disease?

There is an ancient book, in two parts, with many subdivisions, which some have claimed was a work of fiction; if it be so, it is the work of a master mind and is worthy of profound study. The book teaches that righteousness exalteth a nation. Would not more righteousness exalt the medical profession? It mentions a Moses, who strove forty years to lead his people out of bondage into a land of peace and promise. Do we not need a Moses to lead us out of an infectious atmosphere into a pure and sunny climate of moral health? And notice how many laws Moses made for his people; yet without changing their hearts. Then another and greater than Moses came; in infancy, Divine Humanity; in manhood, Human Divinity. He declared, "Ye must be born again." My fellows of the Association and of the profession in total, must we not be born again? Can we legislate goodness into any man? Can we legislate goodness into ourselves? Solomon says: "Jealousy is cruel as the grave, and envy like rottenness of bones." Must not the antidote of love enter into every heart and there abide till we wish to do unto others whatsoever we would have done to us?

A man at threescore-and-plus naturally takes more interest in epitaphs than one of twoscore-and-minus. He ought, therefore, to be pardoned for quoting an epitaph said to be on a tombstone at Dartmoor, England:

"Here lies in horizontal position the outside case of

George Routleigh, Watchmaker
whose abilities in that line were an
honor to his profession.

Integrity was the mainspring and
prudence the regulator of
all the actions of his life.

Humane, generous, and liberal, his
hand never stopped till he
had relieved distress.

So nicely regulated were all his motions
that he never went wrong except
when set agoing by

people who did not know his key.
Even then he was easily set right again.

He had the art of disposing his time so well that
 his hours glided away
 in one continuous round
 of pleasure and delight,
 till an unlucky minute put a period to
 his existence.

He departed this life
 Nov. 14th, 1802,

Aged 57:

wound up
 in hopes of being taken in hand
 by his Maker,
 and of being thoroughly cleaned, repaired,
 and set agoing
 in the world to come."

Your president hopes that every Fellow of the Association, and every member of the medical fraternity will aim at meriting as worthy an epitaph.

A motion was made by Dr. N. L. North that this address, containing so many valuable points, be put on permanent record by incorporating it in the State Transactions. This was amended by Dr. E. R. Squibb to include publication in a prominent medical journal¹ as well. The amendment was accepted by Dr. North. After some discussion by Drs. McCollom, North, and E. R. Squibb, the amended motion was carried unanimously.

The annual report of the executive committee was next read by the secretary, accepted and adopted as read:

REPORT OF EXECUTIVE COMMITTEE, 1897-'98.

Your Committee begs leave to report that all the minor necessary business has been accomplished through the mail, as in previous years, up to the annual meeting this morning. The financial condition of the Branch continues satisfactory, as shown by the Treasurer's statement. The receipts for the year were from assessments collected, \$20; by interest, \$78.09; making a total income of \$98.09. The general expenses were \$78. The increase in the permanent fund during the year was \$30, making a total at this time in the fund drawing interest of \$1,420.

The Treasurer's accounts have been duly audited by your Committee and approved. It has been decided to continue the assess-

¹*Phila Med. Journ.*, Vol. II, page 858.

ment of \$1 for the coming year for all those Fellows who have not joined the permanent fund.

There are eight Fellows who have joined our Association recently, which, according to custom, the Executive Committee have exempted from assessment for the ensuing year.

Your Committee regrets to have to announce officially that since the last annual meeting of this Branch there have been three deaths among the Fellows of this District:

Dr. W. H. Thayer.

Dr. S. H. McIlroy.

Dr. J. G. Truax.

Dr. Thayer was an Original member. All these Fellows have been active in our Association, and their loss is great.

The fourth Tuesday in May, 1899, has been decided upon for the next Branch annual meeting, in compliance with the By-Laws.

Your committee recommends that a hearty welcome and full privileges of the floor be recommended to the delegates from the Kings County Medical Association, and the invited guests who are expected to be present at this meeting.

The programme for the fourteenth annual meeting of the Third District Branch, to be held on Thursday, June 2d, has been received, and a successful scientific meeting is assured by the character of the papers to be read.

The Treasurer's annual statement was then read, which called for no action.

There were no reports of special committees, no unfinished business, and no new business.

The biographical sketches were next read. The Secretary read for Dr. R. M. Wyckoff his sketch of W. H. Thayer, M. D. Sketches were then read by Dr. John Shrady on S. H. McIlroy, M. D., and J. G. Truax, M. D.

On motion these sketches were referred to the Committee on Necrology of the State Association.

Under the call for volunteer papers by the President, no response was made. Dr. T. H. Manley had previously withdrawn the paper announced.

The next business in order was choosing a Nominating Committee to select an Executive Committee for the ensuing year. The Secretary called off the counties of this District, and the members present from those counties chose the following Nominating Committee:

Dr. Wm. Cramer,
Dr. W. H. Biggam,
Dr. Ellery Denison,
Dr. M. C. Conner,
Dr. H. C. Johnston.

This Committee was reminded that it was expected to report at the afternoon session.

A recess of twenty-five minutes was then taken, after which the Session adjourned, at 12:55 p. m., for lunch.

The afternoon session was called to order by the President at 2:05 p. m.

The subject Gonorrhœa having been chosen for discussion for the session, Dr. Robert W. Taylor opened the subject by giving the "Pathology and Treatment in Males."¹

Dr. J. W. S. Gouley then treated of "Urethral Strictures."

Dr. Wm. E. Beardsley next treated of "Gonorrhœal Rheumatism."

Dr. Lawrence Coffin followed by treating of "Gonorrhœal Ophthalmia in Adults "

Dr. Wm. McCollom discussed the "Moral Prophylaxis and the Ethical Duty of Physicians to the Public."

Dr. J. C. Bierwirth made some verbal remarks on the question of the "Medico-Legal Responsibility of Physicians to their Patients and Patients' Friends."

Dr. L. Grant Baldwin then gave the "Symptoms and Diagnosis of Gonorrhœa in Females."

Dr. George H. Mallett was next called upon to speak on "Non-operative Treatment in Females," but he was not present.

Dr. Walter B. Chase followed on the "Operative Treatment."

Dr. F. H. Wiggin was also to speak on the same, but was not present.

Dr. Robert Newman then read his paper advocating "Electro-Therapeutic Treatment."²

Dr. N. L. North, Jr., presented the subject of "Gonorrhœal Ophthalmia of Infants."

Dr. Arthur Mathewson made some verbal remarks in the same line.

Dr. L. A. W. Alleman had expected to speak on this ophthalmia, but was previously called from the meeting.

¹ Published in the *Med. News*.

² Published in the *Brooklyn Med. Journ.*

Dr. Taylor made a few closing remarks.

The discussion being then made general, Dr. T. H. Manley made a few remarks.

The report of the Nominating Committee was next read as follows: as the Executive Committee for 1898-'99, to represent—

Dutchess County,	Dr. Wm. Cramer.
Kings County,	Dr. Wm. Waterworth.
New York County,	Dr. Ellery Denison.
Orange County,	Dr. M. C. Conner.
Putnam County,	Dr. G. W. Murdock.
Queens County,	Dr. E. G. Rave.
Richmond County,	Dr. W. C. Walser.
Rockland County,	(Vacated by death).
Suffolk County,	Dr. E. H. Hamill.
Sullivan County,	Dr. J. A. Munson.
Ulster County,	Dr. H. Van Hoevenberg.
Westchester County,	Dr. E. F. Brush.

On motion, the report was accepted and the Nominating Committee discharged.

The President then made the formal call for a meeting of this new Executive Committee to elect a Secretary for the ensuing year.

Adjourned at 5:10 p. m.

The register showed thirty-two Fellows, two Delegates, and nine guests present.

E. H. SQUIBB, *Secretary*.

EXECUTIVE COMMITTEE.

A called meeting of the Executive Committee was held at 315 Washington Street, Brooklyn, on Tuesday, May 24, 1898. The president, Dr. N. W. Leighton, called the meeting to order at 10:15 a. m.

Present:	Dr. N. W. Leighton.
	Dr. Wm. McCollom.
	Dr. M. C. Conner.
	Dr. H. C. Johnston.
	Dr. A. D. Ruggles.
	Dr. E. H. Squibb.

The Secretary read the minutes of the last meeting, which were approved as read.

The report of the Committee of Arrangements, which was elected by circular vote, was then read and accepted.

The President appointed Dr. Ruggles, and one other later, to act with the Secretary as Registration Committee.

The Secretary reported officially the death of Drs. W. H. Thayer, S. H. McIlroy, and J. G. Truax since the last meeting.

The Treasurer next read his annual accounting, and presented the following statement:

TREASURER'S ANNUAL STATEMENT, MAY 25, 1897, TO MAY 24, 1898.

*Fifth District Branch New York State Medical Association
with E. H. Squibb, Treasurer.*

DR.

To balance cash as per statement May 25, 1897	\$205.99	
Assessments collected	20.00	
Interest	78.09	
	<hr/>	\$304.08

CR.

By rent of meeting rooms for 13th annual meeting	\$10.00	
Catering for 13th annual meeting	50.00	
Postage	12.00	
Printing	6.00	
Balance on hand	226.08	
	<hr/>	\$304.08

PERMANENT FUND ACCOUNT.

DR.

To total amount of fund as per statement May 25, 1897	\$1,390.00	
Contributions to fund to date	30.00	
	<hr/>	\$1,420.00

CR.

By investment in railroad bond, 5 per cent. interest	\$330.00	
Balance on hand at interest	590.00	
	<hr/>	\$1,420.00

The President then appointed Dr. Conner to audit the accounts and the vouchers were surrendered to him.

Upon motion it was resolved to hold the Fifteenth Annual Meeting of the Branch in Brooklyn on the fourth Tuesday in May, 1899, as directed by the by-laws.

The following delegates from the Kings County Medical Association were expected to be present:

Dr. H. A. Alderton,	Dr. J. J. O'Connell,
Dr. R. C. Brewster,	Dr. J. W. Parrish,
Dr. C. P. Gildersleeve,	Dr. Edwin Reynolds,
Dr. John Griffin,	Dr. H. C. Riggs,
Dr. E. S. Hodgskin,	Dr. H. M. Smith,
Dr. B. B. Mosher,	Dr. J. B. Thomas,
Dr. J. Scott Wood.	

Also 62 guests invited by the President.

It was moved and carried that a hearty welcome and full privileges of the floor be extended to both delegates and guests.

The Secretary read the meeting notice received from the Third District Branch giving the programme for their Fourteenth Annual Meeting to be held on June 2, 1898.

After discussion it was unanimously resolved to continue the annual assessment at \$1.00 for all those Fellows who have not joined the permanent fund.

According to custom, it was agreed to exempt from the assessment for 1898 the eight Fellows who had recently joined.

Dr. Conner here reported on his examination of the Treasurer's accounts and found them to be correct. This report was then accepted by the Committee.

The annual report of the Executive Committee to the General Meeting was next read, accepted, and adopted.

Adjourned at 11:15 a. m.

E. H. SQUIBB, *Secretary.*

SUMMARY OF THE SCIENTIFIC WORK OF THE NEW YORK COUNTY MEDICAL ASSOCIA- TION FOR THE YEAR 1898.

ANNUAL MEETING, JANUARY 17TH.

This was devoted to the election of officers and to the transaction of routine business.

President—GEORGE TUCKER HARRISON, M. D., 221 West 23d Street.

Vice-President—FREDERICK HOLME WIGGIN, M. D., 55 West 36th Street.

Recording Secretary—MICHAEL C. O'BRIEN, M. D., 161 West 122d Street.

Corresponding Secretary—PARKER SYMS, M. D., 60 West 47th Street.

Treasurer—JOHN H. HINTON, M. D., 41 West 32d Street.

MEETING OF FEBRUARY 21ST.

After some remarks by the retiring president, DR. J. E. JANVRIN, the newly elected president, DR. GEORGE TUCKER HARRISON, delivered his inaugural address, the theme of which was "The Progress of Medicine During the Nineteenth Century."

DR. THOMAS H. MANLEY reported "A Case of Extensive Resection of the Intestine." The operation was done in connection with the relief of a strangulated hernia, and was completely successful.

DR. LOUIS FISCHER narrated his "Experience with the Administration of Antitoxin per Rectum." He had found the method unreliable, although promising to be of some use in connection with the immunization treatment.

MEETING OF MARCH 21ST.

DR. A. ERNEST GALLANT gave an interesting stereopticon lecture, the object of which was to give intending visitors to the next meeting of the American Medical Association an idea of the beauty of the scenery in Denver and *en route*.

DR. PARKER SYMS presented "A Case of Large Cystic Tumor of the Thyroid," upon which he had successfully operated, enucleating the tumor and relieving the terrible pressure on the trachea.

The subject was discussed by DRs. T. H. MANLEY and ROBERT NEWMAN, the latter giving an account of the early operations on the thyroid gland done in this country.

MEETING OF APRIL 18TH.

DR. E. H. QUINN presented a specimen from "A Case of Abdominal Gestation."

DR. H. J. BOLDT and DR. J. BLAKE WHITE discussed the case, the former questioning the diagnosis on the general ground that the very existence of this condition was denied by some, and the latter relating a case of abdominal pregnancy in which the true condition had been so masked by general peritonitis that the diagnosis had not been made during life.

DR. W. R. INGE DALTON read a paper on "The Treatment of the Paroxysm of Dysmenorrhœa." He deprecated the common use of narcotics in such cases, and insisted upon the physician relieving the pain at once, and then inquiring into the etiology at his leisure. He had found that the intense pain could be relieved most satisfactorily by ten-grain doses of ammonol at the time, or by five-grain doses every night for four nights preceding the menstrual period.

DR. FREDERICK P. HAMMOND read a paper entitled, "A Belief that the So-called Displacements of the Uterus are not Pathological." He contended that the uterus depends upon its fascia and ligaments for its position, and that almost any angle between the body and neck might exist without necessarily being pathological. He considered at length the perplexing question of the normal position of the uterus, and concluded that the various symptoms often ascribed to flexion of this organ are really due to exterior pathological conditions.

DR. H. J. BOLDT opened the discussion by commending the very thorough way in which this controversial subject had been presented. He said that he had observed cardiac and mental symptoms disappear on reposition of a retroflexed uterus, and recur on the removal of the support, but he did not feel sure that the relief experienced might not have been the result of the mental impression on the patient.

DR. J. J. E. MAHER was of the opinion that the abatement of the pain, leucorrhœa and mental disturbances observed on correcting

uterine flexions constituted a potent argument in favor of the view that the angularity of the canal cannot be considered physiological.

THE PRESIDENT took the ground that a physiological cause cannot produce a pathological effect, and that flexions are responsible for mechanical obstruction, adhesive inflammations, and ovarian irritation.

DR. D. P. AUSTIN dwelt upon the injurious effects of constipation, and the remarkable relief of many of the symptoms afforded by securing the regular action of the bowel.

DR. HAMMOND, in closing the discussion, insisted that a uterus which is fixed at any point is not physiologically healthy.

DR. A. B. TUCKER presented "A Specimen of Ruptured Tubal Pregnancy," with a history of the case. Laparotomy had cleared up the diagnosis.

MEETING OF MAY 16TH.

DR. JOHN F. ERDMANN exhibited "A Case of Fracture of the Head of the Humerus, with Subclavicular Displacement," upon which he had successfully operated by resecting one inch and a half of the shaft of the bone. Although the operation was not done until four months after the receipt of the injury, the patient was already able, three weeks after operation, to rotate the arm, and the normal strength of the limb had been restored.

DR. J. J. E. MAHER presented a specimen, together with the history of "A Case of Ovarian Cyst and Extrauterine Pregnancy, with Rupture of the Sac into the Folds of the Broad Ligament;" also "A Ruptured Three-Weeks' Tubal Pregnancy." The diagnosis in these cases was extremely difficult, but both patients had been relieved by operation, and had made satisfactory recoveries.

DR. C. H. CHETWOOD exhibited "An Original Apparatus for Irrigating the Urethra and Bladder," and spoke of the beneficial effects in gonorrhœa of irrigations with a solution of potassium permanganate. Emphasis was laid upon the necessity for care and cleanliness in the manipulations, and the advantage of recurrent flushing.

DR. FERD. C. VALENTINE expressed his approval of the apparatus exhibited, and of the advice given, and then demonstrated on a patient a method of vesical irrigation employed by him in connection with his own apparatus.

DR. ROBERT NEWMAN exhibited a simple apparatus, which he had found useful for irrigation of the urethra. It was nothing

more than a siphon of rubber tubing, to which was connected an ordinary rubber hand-ball, for increasing the pressure when desired.

DR. W. H. BATES read a paper on "The Therapeutic Uses of the Supra-renal Gland," dwelling more particularly upon its application to certain diseases of the eye, ear, nose, and throat. "It was such a powerful astringent," he said, "that when applied to any mucous surface it would relieve the congestion almost instantly." Because of this property, it was useful in diseases of the skin characterized by marked hyperæmia. When the extract of the supra-renal gland is taken internally, it acts as a powerful cardiac stimulant. The solution of the extract should always be freshly prepared for use. For application to mucous membranes, a 1 per cent. solution was recommended, and for internal administration, a 5 per cent. solution.

DR. S. F. BROTHERS then read a paper entitled, "Some Notes on New Practical Pharmaceutico-Therapeutics and New Surgical Instruments." He advocated the use of alkaloids and extracts rather than the crude drugs; the use, for the sake of greater uniformity and simplicity in prescribing, of tablets, powders, and solutions based on the metric system; the use of glycerinated solutions in preference to syrup; and the introduction of a greater variety of flavoring extracts. Dr. Brothers then described a combination water-motor and storage battery, which he had devised, and which had proved very useful in office practice as a convenient and economical source of electricity and power.

The paper was discussed by Drs. LOUIS FISCHER, T. H. MANLEY, and L. W. ZWISOHN.

MEETING OF JUNE 20TH.

DR. A. BROTHERS reported "A Case of Vicarious Tubal Menstruation," which elicited a discussion from Drs. A. PALMER DUDLEY and ANDREW F. CURRIER, the former dwelling at some length on the mechanism of the menstrual flow, and reporting cases in which, owing to obstruction in the Fallopian tube, the menstrual blood has been 'discharged into the peritoneal cavity.

DR. THOMAS J. HILLIS read a paper entitled, "The Midwifery Question—Must the Midwife Perish?" He pleaded for the continuance of the midwife on the ground that she was a necessity, and had become an integral part of the family life of the lower classes, and that the physician's presence was often not desired, except in unusual cases.

DR. MANLEY suggested that the physician should exercise more care in making his fees conform to the financial condition of the family, and expressed the hope that the midwife of the future would be the obstetrical trained nurse.

DR. ZWISOHN deplored the liberties now taken by the midwife with the lives of children and the health of mothers.

DR. J. S. PETERSON declared that ignorant midwives should be suppressed, and suggested that the practitioners of the present day might, with advantage to themselves and their patients, take many things to the lying-in chamber which are thought by the older physicians to have no place in the obstetric armamentarium.

DR. A. PALMER DUDLEY said that, while the midwife had much to learn, and should be given the needed information, she must be looked upon as a necessary part of the life of large cities in which the population consists of a large foreign element.

DR. R. ABRAHAMS read a paper entitled, "The Trendelenburg Position in Prolapse of the Funis." He recommended that this position be secured in private practice by the use of a chair under the bedding, and narrated several cases illustrative of the advantages of this postural method.

The paper was discussed by DR. A. BROTHERS.

DR. LOUIS LICHTSCHEIN read a paper on "Hypnotism in Pregnancy and Labor." He found that insomnia, morning sickness, toothache, and many of the other minor ailments of pregnancy might be relieved by hypnotism, and that the same influence could be invoked in some instances for the purpose of securing painless labor.

MEETING OF OCTOBER 17TH.

DR. FREDERICK HOLME WIGGIN reported "A Case of Abdominal Hysterectomy for Pyosalpinx," which was interesting on account of the fact that in repairing an accidental rent in the ileum, he had made use of a modification of the Maunsell method of intestinal suture, thus demonstrating the safety and practicability of a suture passing through all the intestinal coats.

DR. WIGGIN also presented "Two Large Abdominal Tumors." One of these, a myofibroma weighing twenty pounds, which had been successfully removed from a woman fifty-nine years of age; the other, a myoma weighing seventeen pounds, removed from a woman of forty-one years.

DR. J. A. WYETH spoke of the important saving in time effected by the Maunsell method, to say nothing of the still further saving

now attainable by the use of Dr. Wiggin's modification. "It was remarkable," he said, "how rapidly the line of suture is protected by the formation of a plastic exudate in these cases."

DR. T. H. MANLEY objected to the removal of old fibroids, except where they gave rise to great discomfort.

DR. LEON T. LE WALD, speaking for the pathologist, referred to the very great rarity of this particular kind of fibroma.

THE PRESIDENT expressed the opinion that the fibroma had been, originally, subserous, and had become detached and had contracted new adhesions. In support of this view, he reported a case occurring in his experience, in which the true condition had been demonstrated by autopsy.

DR. T. D. CROTHERS, of Hartford, presented, by invitation, a paper on "The Medical Side of the Alcoholic Problem." He deplored the ineffectual efforts of physicians to deal with alcoholism as a physical rather than a moral defect, and the tendency to relegate this important work to philanthropists and the laity in general. He laid down some principles of treatment for both the paroxysms and the alcoholic habit.

The paper was discussed by DRs. ILLOWAY, WASHBURN, and MANLEY.

DR. A. ERNEST GALLANT then exhibited "A Foreign Body from the Uterus," which was interesting because of its vegetable nature.

MEETING OF NOVEMBER 21ST.

DR. FREDERIC S. DENNIS presented "A Case of Stricture of the Esophagus from Typhoid Ulceration." Last March the man had been starving, but, as a result of gastrotomy performed at that time, he had since been able to feed himself, and had gained seventy-eight pounds.

DR. DENNIS also presented "Two Cases of Extensive Resection of Bone for Tuberculous Joint Disease." They were discussed by DR. MANLEY.

DR. ROBERT ABRAHAMS presented "A Case of Lupus Erythematosus with Probable Malignant Degeneration," which was interesting, not only on account of its typical nature and great extent, but because of the apparently epitheliomatous tendency and the long duration of the disease.

DR. T. H. MANLEY presented "A Case of Osteomyelitis of the Tibia," successfully treated by incision, and two other patients who furnished a text for "Some Remarks on the Treatment of Crushing Injuries by Embalming Dressings." He also presented

"A Multilocular Dermoid Cyst of the Scrotum," "A Tumor from the Cervic Uteri," and "A Tumor from the Scalp."

DR. J. F. ERDMANN presented "A Case of Resection of the Head of the Humerus." The operation was done because of an irreducible dislocation of the head of the humerus, the result of an injury received six weeks before. It was found that the head had been completely deprived of its periosteum, and the muscular and capsular attachments torn off. The functional result was good.

DR. EDWARD A. TRACY, of Boston, read, by invitation, a paper descriptive of "A Safe and Quick Method of Joint and Bone Fixation." The method consisted in properly shaping and molding to the unprotected limb a fixative material composed of wood fibre reinforced by gauze. Such splints, he said, are light and durable, and give better fixation than plaster of Paris.

DR. MANLEY indorsed the use of this splint material.

DR. WICKES WASHBURN read a paper on "Montauk Point and the Government Hospitals," illustrating it by maps and drawings so as to make clear the sanitary arrangements, and particularly the geology of that region and its bearing on the natural purity of its water supply. He described the lack of organization and preparation at the camp, paid a tribute to the high character of the work done by the women nurses, and expressed the belief that many of the abuses which had arisen at the camp were referable to a disinclination on the part of the medical officers of the regular army to make suggestions that might possibly offend their superiors in rank.

MEETING OF DECEMBER 19TH.

DR. JOHN A. WYETH reported a series of cases illustrating the possibilities of "Conservative Treatment of Stricture of the Bowel." In this connection he spoke of the treatment of epithelioma on the surface of the body by such caustics as Marsden's paste, and stated that his experience with this method dated back a number of years, and he could point to a number of very gratifying cures. Some years ago he had begun the use of injections of arsenious acid in cases of sarcoma in which the diagnosis had been established by experts beyond all peradventure. The results had been very encouraging, as had also been some obtained by the production of violent streptococcus inflammation.

DR. J. HERBERT CLAIBORNE read a paper entitled, "Remarks on Exophthalmic Goitre." He discussed chiefly the various theories that had been propounded to explain the etiology of this disease,

but dwelt also upon certain symptoms which had been considered of importance in connection with the diagnosis. The treatment was necessarily the treatment of the symptoms.

DR. FRANCIS J. QUINLAN referred to the subsidence of the symptoms sometimes observed as a result of cauterization of the turbinates and medication of the pharyngeal vault.

DR. W. M. LESZYNSKY said that the toxic theory of the disease was steadily growing in favor. As to the Fiske-Bryson symptom, he was sure that many neurologists would agree with him that it was not at all distinctive. The statistics of the operative treatment were not encouraging.

DR. OGDEN C. LUDLOW then read a paper entitled, "A Fallacious Test for Albumin in the Urine, with Remarks on the Best Tests." He showed, by the records of one hundred and fifty examinations, that the addition to the urine of alcohol in excess gives the alleged reaction for albumin in a very large percentage of cases in which the other and standard tests absolutely fail, and gave reasons for believing that the substance thus precipitated was not only not serum-albumin, but differed apparently from the other albuminoids commonly found in normal urine. As tests for albumin, he preferred the nitric acid and nitric-magnesian tests, the latter being somewhat more delicate, and its reaction more distinct in turbid urine.

DR. LOUIS FAUGÈRES BISHOP said that his experience had afforded abundant proof of the value of the nitric-magnesian test.

DR. JAMES CAMERON MACKENZIE thought the nitric acid test would fulfil all the requirements of the clinician provided the urine was allowed to flow down upon the acid instead of the acid being pipetted down though the urine.

DR. FREDERICK HOLME WIGGIN exhibited "A Gangrenous Vermiform Appendix" he had just removed by operation.

SUMMARY.

Medical papers	8
Surgical papers	2
Obstetric and gynecologic papers	5
Apparatus exhibited	3
Specimens exhibited	8
Cases presented or reported	15
Total number of contributions	41

M. C. O'BRIEN,

Recording Secretary.

GEORGE TUCKER HARRISON,

President.

PROCEEDINGS.

FIFTEENTH ANNUAL MEETING

OF THE

NEW YORK STATE MEDICAL ASSOCIATION.

HELD AT THE MOTT MEMORIAL LIBRARY, 64 MADISON AVENUE,
NEW YORK CITY, OCTOBER 18, 19, AND 20, 1898.

FIRST DAY, OCTOBER 18.

MORNING SESSION.

The meeting was called to order by the PRESIDENT, DR. DOUGLAS AYRES, of Montgomery County, at 10:15 a. m.

The report of the Committee of Arrangements was presented by the Chairman of that Committee, DR. FREDERICK HOLME WIGGIN, and, on motion, the report was accepted.

The annual report of the Council was then read by the SECRETARY. On motion, the report was accepted.

The report of the Special Committee on Abuse of Medical Charity was presented by the Chairman of that committee, DR. FREDERICK HOLME WIGGIN. On motion, the report was accepted.

The SECRETARY then moved that the recommendations of this committee be adopted, viz.: that the committee be discharged, and a new committee be appointed to continue the work during the coming year along the lines already laid down. Seconded, and carried unanimously.

The reports of the various District Associations, and of the New York County Medical Association, were read by title.

After the reading of the Annual Address of the PRESIDENT, the regular scientific programme was taken up.

On motion, the session adjourned at 1 p. m.

AFTERNOON SESSION.

The meeting was called to order by the PRESIDENT at 2:15 p. m.

The SECRETARY announced the appointment of the following Nominating Committee:

First District, DRS. C. H. GLIDDEN and W. B. REID.

Second District, DRS. E. M. LYON and C. E. FRITTS.

Third District, DRS. L. J. BROOKS and H. W. CARPENTER.

Fourth District, DRS. DeL. ROCHESTER and W. H. THORNTON.

Fifth District, DRS. F. H. WIGGIN and C. E. DENISON.

At large, DR. J. W. S. GOULEY.

On motion, the session adjourned at 5 p. m.

EVENING SESSION.

The meeting was called to order by the PRESIDENT at 7:45 p. m.

After the reading of one scientific paper, and lantern exhibitions by DR. S. ALEXANDER, of New York County, and DR. H. ERNST SCHMID, of Westchester County, the session adjourned for the usual collation.

SECOND DAY, OCTOBER 19.

MORNING SESSION.

The meeting was called to order by the PRESIDENT at 10:10 a. m.

The following Committee on the Treasurer's Accounts was appointed:

DR. E. M. LYON,

DR. C. H. GLIDDEN,

DR. C. E. DENISON.

The next order of business was the Reception of Delegates from other state societies.

DR. OLIVER T. OSBORN, of New Haven, in presenting the greetings of the Connecticut Medical Society, said that he had been instructed to present the following resolutions adopted by his society, and to request that the New York State Medical Association take similar action:

Resolved, that the Secretary of this Society be instructed to write to the senators from Connecticut, that it is the opinion of the members of the Connecticut Medical Society that the legislation embodied in Senate bill 1063 is uncalled for, and hence,

unwise ; that in its scope it is prejudicial to scientific medical research; that it is mischievous and inquisitorial and prohibitive in its details, and if carried out it will prevent the employment of some of the most beneficent measures for the combating of disease and the prolonging of life that the world has known;

Resolved, that it is the glory of the medical science of the century that the average of human life has increased by more than ten years, and we assert that this has been brought about in a very great measure by the study of physiological and biological processes as exemplified in, and investigated by, experiments upon animals. We regard these experiments to be as completely justified as is the employment of animal food to sustain life; and we most earnestly and respectfully urge upon the honorable senators from the state of Connecticut to oppose by any legitimate means the enactment of legislation that would in any way interfere with scientific research and is unauthorized by the Society for the Prevention of Cruelty to Animals in the District of Columbia.

Resolved, that the Delegates of this Society to other state societies and associations are requested to bring this subject in proper form to the notice of these societies and associations, and to ask them to take corresponding action.

[Signed]

N. E. WORDEN, M. D.,

Secretary.

DR. E. D. FERGUSON moved that the communication from the Connecticut Medical Society be received, and entered upon the minutes. and that the spirit and substance thereof be hereby approved by this Association. Seconded, and carried unanimously.

DR. H. L. SWAIN, of New Haven, another delegate from the Connecticut Medical Society, stated, by way of emphasis, that the American Laryngological Association, of which he was an officer, had taken similar action regarding this bill in 1896, and many of the members had personally written to their representatives at Washington, urging the suppression of such pernicious legislation. This was the only way in which effectual resistance could be offered.

DR. A. J. MILLER, of Brattleboro, then spoke for the Vermont State Medical Society, and DR. SOLOMON SOLIS COHEN, of Philadelphia, responded for the Medical Society of the State of Pennsylvania.

The SECRETARY announced the appointment of the following committees:

Committee on Abuse of Medical Charity.

DR. WIKES WASHBURN, *Chairman*,
DR. E. D. FERGUSON,
DR. NEIL J. HEPBURN,
DR. DELANCEY ROCHESTER.

Committee on Legislation.

DR. E. ELIOT HARRIS, *Chairman*,
DR. L. J. BROOKS,
DR. E. D. FERGUSON.

On motion, the session adjourned at 1:05 p. m.

AFTERNOON SESSION.

The meeting was called to order by the PRESIDENT at 2:15 p. m.
and an adjournment was taken at 5:45 p. m.

In the evening a banquet was given at the Hotel Manhattan.

THIRD DAY, OCTOBER 20.

MORNING SESSION.

The meeting was called to order by the PRESIDENT at 10:10 a. m.
The SECRETARY presented the following report of the Nominating Committee:

President—DR. JOSEPH D. BRYANT, of New York.

Vice-president, First District—DR. J. G. HUNT, of Utica.

Vice-president, Second District—DR. D. C. MORIARTY, of Saratoga Springs.

Vice-president, Third District—DR. F. D. REESE, of Cortland.

Vice-president, Fourth District—DR. W. M. BEMUS, of Jamestown.

Secretary—DR. M. C. O'BRIEN, of New York.

Treasurer—DR. E. D. FERGUSON, of Troy.

MEMBERS OF THE COUNCIL.

First District—DR. JOHN P. SHARER, of Little Falls.

Second District—DR. C. E. FRITTS, of Hudson.

Third District—DR. L. J. BROOKS, of Norwich.

Fourth District—DR. DELANCEY ROCHESTER, of Buffalo.

Fifth District—DR. CHARLES E. DENISON, of New York.

On motion, the report was accepted and adopted, and the SECRETARY was authorized to cast one ballot for the list of names as read. These officers were declared duly elected.

On motion, an adjournment was taken at 12:30 p. m.

AFTERNOON SESSION.

The meeting was called to order by the PRESIDENT at 2:05 p. m.

The Committee on Treasurer's Accounts then reported that it had examined the accounts, and found the same correct.

On motion, the report was accepted.

After the completion of the scientific programme, DR. DOUGLAS AYRES said: "This closes the scientific work of the Fifteenth Annual Meeting, and I wish to thank you for the aid given me in carrying out the programme. I assure you I have taken great pleasure in serving you. It is now my agreeable duty to introduce our next PRESIDENT—DR. JOSEPH D. BRYANT, of New York."

DR. JOSEPH D. BRYANT: "I should indeed be devoid of the ordinary sense of appreciation were I not fully cognizant of the honor which you have bestowed upon me. I, too, shall expect, in receiving this trust at your hands, that you will support me with the same fidelity and with the same determination to succeed that has characterized your action in connection with my friend on the right, the retiring PRESIDENT. Indeed, if it shall be my good fortune at the expiration of the term to which I have been elected, to turn over to you the affairs of the Association in as good condition, and with as much *esprit de corps* as now attends its labors and what it stands for, then, surely, I think, I may be regarded at least as not having lived in vain.

"I am not going to take up your time with a lengthy address. You and I are aware of the fact that words are much more easily spoken than understood; in this life it is actions and not words which move the world. Words often prove the incentive and the stimulus, but action is what provides the force that brings into effect the sentiment which the words produce. I have labored for the Association for some years, and therefore we are not strangers to one another. May I ask, however, that you will work with the same degree of interest for the success of the Association as I

believe I shall labor for its entertainment; and may I ask, too, above all things, that each of us may be punctual in attendance at the next annual meeting, for I regard punctuality as one of the greatest stimulants to human effort. I thank you again, and again express the hope that I may turn over to you the affairs of the Association with the ruddy aspect which it now wears, and with all that that implies.

“May I now ask your further pleasure?”

On motion of the SECRETARY, the Fifteenth Annual Meeting was declared adjourned at 4:30 p. m.

ANNUAL REPORT OF THE COUNCIL
AND
MINUTES OF THE SESSIONS OF THE COUNCIL
FOR THE YEAR 1898.

The Council met for the Fifteenth Annual Session at its hall in Mott Memorial Library, on Monday, October 17, 1898, at 8:30 p. m.

Present: The chairman, Dr. Ayres, and Drs. Brooks, Carpenter, Denison, Ferguson, Garloch (*vice* Dr. Robb, deceased), Gouley, Lyon, and Wiggin.

The following candidates were appointed Fellows, viz.: Thos. F. Reilly, W. J. Ayling, J. H. Woodward, A. W. Baylis, F. H. Millener, J. J. Mooney, M. J. Wilson, H. C. Gordinier, Grace A. Murphy, W. L. Hogeboom, Charles C. Rathbone, J. J. Kindred, John H. French, Mary Gage-Day, Joseph B. Bissell, John W. Wainwright, Henry L. Sterns.

The chairman of the Library Committee presented his report, as follows:

Fourteenth Annual Report of the Library Committee of the New York State Medical Association, October 17, 1898.

The Library Committee's report for the current year is as follows: On the first day of October, 1897, the library contained nine thousand five hundred and fifty-one (9,551) volumes. From that date to October 1, 1898, twenty-seven (27) volumes of transactions of state societies were received in exchange for transactions of this Association, and nineteen (19) volumes from Dr. E. D. Ferguson of Rensselaer county, making, together with the Index Medicus, forty-eight (48) volumes received during the year, so that, at this date, October 1, 1898, the library consists of nine thousand five hundred and ninety-nine (9,599) volumes, besides the catalogued pamphlets already reported upon, and about fifteen hundred numbers of medical journals, and a number of pamphlets

contributed by Doctor Hurley and Doctor John Shrady. During the year ending September 30, 1898, one hundred and twenty-three visits were made to the library by Fellows of the Association, medical students, and other persons.

J. W. S. GOULEY, M. D.,
Director of the Library and Chairman of the Committee.

The report was accepted.

The treasurer then presented his annual report:

NEW YORK STATE MEDICAL ASSOCIATION.

ANNUAL REPORT OF THE TREASURER FROM OCTOBER 1, 1897, TO
 OCTOBER 1, 1898.

RECEIPTS—GENERAL FUND.

Balance from last report	\$3,510.05	
Dues	2,075.00	
Initiation fees	100.00	
Sale of Transactions	23.09	
	<hr/>	\$5,708.05

DISBURSEMENTS.

Sundries, including Transactions	\$3,762.51	
Postage	102.50	
Expressage and freight	50.58	
Error in footing last year's account	10.12	
	<hr/>	3,925.71
		<hr/>
		\$1,782.34

LIBRARY AND BUILDING FUND.

Amount from last report	\$3,008.41	
Interest	105.00	
	<hr/>	\$3,113.41
		<hr/>
Total funds in treasury		\$4,895.75

Though a special appropriation of \$2,000.00 was made for the Rush Monument Fund of the American Medical Association, the funds are only \$1,623.71 less than at last year's report.

[Signed] E. D. FERGUSON, *Treasurer.*

The report was accepted.

The Committee on Publications then presented its report.

The Chairman of the Committee on Publications begs leave to report as follows :

The fourteenth volume of our Transactions was printed at Concord, N. H., but the Republican Press Association, which took the contract, and which had given satisfaction in former work, was changed during the winter into the Rumford Printing Company. Though no material change was made in the personnel of the management, it was the cause of some delay in the work.

An edition of one thousand copies was printed, and has been distributed so far as required.

The cost of printing, binding, and the partial distribution from Concord, was \$1,181.66. About \$70.00 in addition was required in the distribution from the office of the treasurer.

[Signed] E. D. FERGUSON,
Editor and Chairman.

The report was accepted and adopted.

The following bills were then audited and approved :

Styles & Cash, for printing circulars, slips, programmes, etc.,	\$48.60
Committee of Arrangements, for clerical work and postage	\$156.64
Disbursements by Dr. C. E. Denison, for stamps, envelopes, etc.	\$48.40

The Council then adjourned.

[Signed] E. D. FERGUSON, *Secretary.*

LIST OF FELLOWS.

1898.

LIST OF FELLOWS.

BY DISTRICT AND COUNTY.

FIRST OR NORTHERN DISTRICT.

FULTON COUNTY.

Original. Blake, Clarence R. Northville.
Drake, D. Delos. Johnstown.
Edwards, John. Gloversville.

3

HAMILTON COUNTY.

McGann, Thomas. Wells.

1

HERKIMER COUNTY.

Douglas, Edgar H. Little Falls.
Garlock, William D. Little Falls.
Original. Glidden, Charles H. Little Falls.
Hayes, Wm. E. Frankfort.
Santry, A. B. Little Falls.
Original. *Sharer, John P. Little Falls.
Original. Young, John D. Starkville.

7

JEFFERSON COUNTY.

Founder. Crowe, J. Mortimer. Watertown.
Original. Johnson, Parley H. Adams.
Joslin, Albert A. Watertown.

3

* Deceased.

LEWIS COUNTY.

Crosby, Alexander H. Lowville.

1

MONTGOMERY COUNTY.

- Original. Ayres, Douglas. Fort Plain.
Caldwell, Nathan A. Hageman's Mills.
French, S. H. Amsterdam.
- Original. Johnson, Richard G. Amsterdam.
Klock, Charles M. St. Johnsville.
Meyer, George L. Stone Arabia.
- Founder. *Robb, William H. Amsterdam.
Simons, Frank E. Canajoharie.

8

ONEIDA COUNTY.

- Original. Bagg, Moses M. Utica.
- Original. Blumer, G. Alder. Utica.
- Original. *Booth, Wilbur H. Utica.
Churchill, Alonzo. Utica.
Dodge, Amos P. Oneida Castle.
Douglass, James W. Booneville.
Fitzgerald, John F. Rome.
Fuller, Earl D. Utica.
- Original. Hunt, James G. Utica.
Marsden, W. R. Utica.
Munger, Charles. Knoxboro.
Nold, John B. Utica.
Palmer, Henry C. Utica.
- Founder. Porter, Harry N. Washington, D. C.
Reid, Christopher C. Rome.
Reid, W. B. Rome.
Russell, Charles P. Utica.
Scully, Thomas P. Rome.
Stout, E. G. Utica.
Sweeney, James M. Utica.
Tefft, Charles B. Utica.

21

* Deceased.

OSWEGO COUNTY.

- Bacon, Charles G. Fulton.
Bates, Nelson W. Central Square.
Cooley, F. L. Oswego.
Cooley, R. N. Hannibal Centre.
Original. DeWitt, Byron. Oswego.
Marsh, E. Frank. Fulton.

6

SECOND OR EASTERN DISTRICT.

ALBANY COUNTY.

- Abrams, H. C. Newtonville.
Founder. Bailey, Theodore P. Albany.
Haynes, John U. Cohoes.
Montmarquet, J. D. Cohoes.
Rulison, L. B. Watervliet.
Founder. Sabin, William B. Watervliet.
Swan, William E. Albany.
Original. Van Vranken, Adam T. Watervliet.
Zeh, Merlin J. Watervliet.

9

CLINTON COUNTY.

- Founder. Dodge, Lyndhurst C. Rouse's Point.
Holcomb, O. A. Plattsburgh.
Founder. Lyon, E. M. Plattsburgh.

3

COLUMBIA COUNTY.

- Original. Benham, John C. Hudson.
Bradley, O. Howard. Hudson.
Clum, Franklin D. Cheviot.
Fritts, Crawford Ellsworth. Hudson.
Johnson, Henry W. Hudson.
Original. Lockwood, J. W. Philmont.
Original. Smith, H. Lyle. Hudson.
Vedder, George W. Philmont.

Founder. Wilson, Thomas. Claverack.
 Woodruff, R. Allen. Philmont.
 Woodworth, T. Floyd. Kinderhook.

11

ESSEX COUNTY.

Founder. Barton, Lyman. Willsborough.
 Barton, L. G. Willsborough.
 Original. D'Avignon, Francis J. Au Sable Forks.
 Original. LaBell, Martin J. Lewis.
 Original. Turner, Melvin H. Ticonderoga.

5

GREENE COUNTY.

Original. Conkling, George. Durham.
 Getty, A. H. Athens.
 Original. Selden, Robert. Catskill.

3

RENSSELAER COUNTY.

Original. *Allen, Amos. Grafton Centre.
 Founder. Allen, Charles S. Rensselaer.
 Allen, William L. Rensselaer.
 Baynes, Joseph E. Troy.
 Bissell, James H. Troy.
 Bonesteel, H. F. Troy.
 Founder. Bonesteel, William N. Troy.
 Original. Bontecou, Reed B. Troy.
 Boyce, Elias B. Averill Park.
 Founder. Burbeck, Charles H. Troy.
 Cahill, John T. Hoosick Falls.
 Church, Thomas C. Valley Falls.
 Original. Cooper, William C. Troy.
 Crounse, Andrew C. Melrose.
 Dickinson, M. D. Troy.
 Dickson, Thomas Gordon. Troy.
 Founder. Ferguson, E. D. Troy.
 Founder. Finder, William. Troy.
 Gordinier, Herman C. Troy.
 Gravatt, Edwin J. Troy.
 Greenman, C. E. Troy.

* Deceased.

- Hannan, Thomas H. Hoosick Falls.
 Founder. Harvie, J. B. Troy.
 Original. Heimstreet, Thomas B. Troy.
 Hogeboom, Wm. L. Troy.
 Original. Houston, David W. Troy.
 Hutton, M. B. Valley Falls.
 Original. Lyon, George E. St. Louis, Mo.
 Lyons, Edward L. Troy.
 Marsh, James P. Troy.
 Morehouse, E. W. Troy.
 Murphy, Grace A. Troy.
 Founder. Nichols, Calvin E. Troy.
 Founder. Nichols, William H. West Sand Lake.
 Phelan, Francis J. Troy.
 Founder. Rousseau, Zotique. Troy.
 Founder. Seymour, W. Wotkyns. Troy.
 Original. Skinner, Smith A. Hoosick Falls.
 Smith, Frederick A. Troy.
 Tompkins, Fred J. Lansingburgh.
 Ward, R. H. Troy.

41

SARATOGA COUNTY.

- Allen, Henry J. Corinth.
 Bullard, T. E. Schuylerville.
 Church, George T. Saratoga.
 Founder. Comstock, George F. Saratoga Springs.
 Original. Crombie, Walter C. Mechanicsville.
 Curtis, P. C. Round Lake.
 Original. *Dunlop, John J.
 Gow, Frank F. Schuylerville.
 Founder. Grant, Charles S. Saratoga Springs.
 Founder. *Hodgman, William H. Saratoga Springs.
 Hudson, George. Stillwater.
 Humphrey, J. F. Saratoga Springs.
 Inlay, Erwin G. Saratoga Springs.
 Original. Johnston, Ianthus G. Greenfield Centre.
 Keefer, Charles W. Mechanicsville.
 Kniskern, A. C. Mechanicsville.
 Moriarta, D. C. Saratoga Springs.
 Palmer, F. A. Mechanicsville.

*Deceased.

- Parent, J. S. Birchton.
- Founder. Reynolds, Tabor B. Saratoga Springs.
 Sherer, John D. Waterford.
 Sherman, F. J. Ballston.
 Smith, F. A. Corinth.
- Original. Stubbs, Roland H. Waterford.
 Swanick, A. A. Saratoga Springs.
 Sweetman, J. T., Jr. Ballston.
 Thompson, Amos W. Saratoga Springs.
 Varney, Miles E. Saratoga Springs.
 Warner, John W. Saratoga Springs.
 Webster, W. B. Schuylerville.
 Zeh, Edgar. Waterford.

31

SCHENECTADY COUNTY.

- Original. McDonald, George E. Schenectady.
 McDougall, R. A. Duaneburgh.
- Original. Reagles, James R. Schenectady.
- Original. Van Zandt, Henry C. Schenectady.
 Veeder, Andrew T. Pittsburgh, Pa.

5

SCHOHARIE COUNTY.

- Original. Hagadorn, William. Gilboa.

1

WARREN COUNTY.

- Fielding, F. G. Glens Falls.
 Fitzgerald, David J. Glens Falls.
 Henning, Thomas I. Glens Falls.
 Hunt, W. J. Glens Falls.
- Original. Martine, Godfrey R. Glens Falls.
 Montgomery, J. J. Luzerne.

6

WASHINGTON COUNTY.

- Lambert, John. Salem.

1

THIRD OR CENTRAL DISTRICT.

BROOME COUNTY.

- Founder. Chittenden, Joseph H. Binghamton.
 Dudley, Dwight. Maine.
 *Eastman, L. O. Union.
 Farnham, Le Roy D. Binghamton.
 Farrington, John M. Binghamton.
 Greene, Clark W. Binghamton.
 Guy, J. D. Chenango Forks.
 Hough, F. P. Binghamton.
 Knapp, W. H. Binghamton.
 Lounsberry, Robert L. Binghamton.
 Michael, F. M. Binghamton.
 Founder. Orton, John G. Binghamton.
 Pierce, Edward A. Binghamton.
 Pierson, G. E. Kirkwood.
 Founder. Putnam, Frederick W. Binghamton.
 Founder. Richards, Charles B. Binghamton.
 Rodgers, Harris C. Binghamton.
 Slater, Frank Ellsworth. Binghamton.
 Smith, Edward L. Binghamton.
 White, William A. Binghamton.

20

CAYUGA COUNTY.

- Kenyon, Frank. Scipio.
 Original. Kenyon, M. King's Ferry.
 Original. Laird, William R. Auburn.
 Lewis, Le Roy. Auburn.
 Founder. *Sawyer, Conant. Auburn.
 Original. Tripp, John D. Auburn.
 Woodruff, E. Gould. Auburn.

7

CHEMUNG COUNTY.

- Fisher, J. C. Elmira.
 Original. Ross, Frank W. Elmira.

* Deceased.

Squires, Charles L. Elmira.
Original. Wales, Theron A. Elmira.

4

CHENANGO COUNTY.

Original. Blair, Louis P. McDonough.
Original. Brooks, Leroy J. Norwich.
 Douglas, George. Oxford.
Original. Lyman, H. C. Sherburne.
 Noyes, James B. New Berlin.
 Packer, Thurston G. Smyrna.
 Smith, Samuel L. Smithville.
 Thompson, R. A. Norwich.
 Williams, George O. Greene.

9

CORTLAND COUNTY.

Bradford, George D. Homer.
Didama, E. A. Cortland.
Founder. Hendrick, Henry C. McGraw.
 Higgins, F. W. Cortland.
Founder. Jewett, Homer O. Cortland.
 Reese, Frank D. Cortland.

6

DELAWARE COUNTY.

Drake, James B. Hancock.
Morrow, William B. Walton.
Sheffield, J. W. Sidney.
Smith, George C. Delhi.
Winne, J. V. E. Sidney.

5

MADISON COUNTY.

Original. Birdsall, Gilbert. N. Brookfield.
 Burhyte, O. W. Brookfield.
Original. Carpenter, Henry W. Oneida.
 Cavana, Martin. Oneida.
 Drake, Frank C. Oneida.

Huntley, James F. Oneida.

Miles, George W. Oneida.

7

ONONDAGA COUNTY.

- Original. Aberdein, Robert. Syracuse.
 Ayling, William J. Syracuse.
 Brown, Ulysses H. Syracuse.
 Campbell, A. J. Syracuse.
 Founder. Didama, Henry D. Syracuse.
 Original. Donohue, Florince O. Syracuse.
 Original. Edwards, Amos S. Syracuse.
 Original. Edwards, George A. Syracuse.
 Original. Hatch, C. A. Syracuse.
 Founder. Head, Adelbert D. Syracuse.
 Original. Jacobson, Nathan. Syracuse.
 Founder. Kneeland, Jonathan. Onondaga.
 Original. Munson, W. W. Otisco.
 Founder. Parsons, Israel. Marcellus.
 Founder. Van de Warker, Ely. Syracuse.

15

OTSEGO COUNTY.

- Church, B. A. Oneonta.
 Founder. Leaning, John K. Cooperstown.
 Original. Martin, John H. Otsego.
 Sweet, Joshua J. Unadilla.

4

SCHUYLER COUNTY.

- King, James K. Watkins.
 Leffingwell, E. D. Watkins.
 Smelzer, Baxter T. Montour Falls.

3

SENECA COUNTY.

- Bellows, George A. Waterloo.
 Clark, George W. Waterloo.
 Founder. Lester, Elias. Seneca Falls.

*Seaman, Frank G. Seneca Falls.
Welles, S. R. Waterloo.

5

TIOGA COUNTY.

Original. Ayer, W. L. Owego.
Cady, George M. Nichols.

2

TOMPKINS COUNTY.

Founder. Beers, John E. Danby.
Biggs, Chauncey P. Ithaca.
Flickinger, John. Trumansburg.

3

FOURTH OR WESTERN DISTRICT.

ALLEGHANY COUNTY.

Witter, G. H. Wellsville.

1

CATTARAGUS COUNTY.

Ellsworth, Victor A. Boston, Mass.
Mudge, Seldon J. Olean.

2

CHAUTAUQUA COUNTY.

Founder. Ames, Edward. Kalamazoo, Mich.
Bemus, Morris N. Jamestown.
Bemus, William Marvin. Jamestown.
Blanchard, R. N. Jamestown.

Founder. Dean, Harmon J. Brocton.
Moore, Macdonald. Fredonia.

Founder. Strong, Thomas D. Westfield.

7

*Deceased.

ERIE COUNTY.

- Original. Atwood, H. L. Collins Centre.
 Original. *Bartlett, Frederick W. Buffalo.
 Baylis, A. W. Buffalo.
 Bennett, Arthur G. Buffalo.
 Bergtold, W. H. Buffalo.
 Original. Boies, Loren F. Buffalo.
 Brown, George L. Buffalo.
 Burghardt, Francis Augustus. Buffalo.
 Buswell, Henry C. Buffalo.
 Cohen, Bernard. Buffalo.
 Congdon, Charles E. Buffalo.
 Cooke, Almon H. Buffalo.
 Cott, George F. Buffalo.
 Founder. *Cronyn, John. Buffalo.
 Original. Daniels, Clayton M. Buffalo.
 Dayton, C. L. Buffalo.
 Original. Dorland, Elias T. Buffalo.
 Frederick, Carlton C. Buffalo.
 Green, Stephen S. Buffalo.
 Original. Greene, DeWitt C. Buffalo.
 Founder. *Greene, Joseph C. Buffalo.
 Original. Harrington, D. W. Buffalo.
 Hayd, Herman E. Buffalo.
 Himmelsbach, George A. Buffalo.
 Howard, Charles F. Buffalo.
 Founder. Hoyer, F. F. Tonawanda.
 Hubbell, Alvin A. Buffalo.
 Hunt, H. L. Orchard Park.
 Ingraham, Henry D. Buffalo.
 Jackson, William H. Springville.
 Jones, Allen A. Buffalo.
 McFarlane, William A. Springville.
 Millener, Frederick H. Buffalo.
 Mooney, James J. Buffalo.
 Mulford, Henry J. Buffalo.
 Phelps, William C. Buffalo.
 Pohlman, Julius. Buffalo.
 Rochester, DeLancy. Buffalo.

* Deceased.

- Stockton, Charles G. Buffalo.
 Strong, Orville C. Colden.
 Taber, R. C. Tonawanda.
 Thornton, William H. Buffalo.
 Founder. *Tremaine, William S. Buffalo.
 Trull, H. P. Williamsville.
 Twohey, John J. Buffalo.
 Wall, Charles A. Buffalo.
 Founder. Wyckoff, Cornelius C. Buffalo.

47

GENESEE COUNTY.

- Andrews, Lewis B. Byron.
 Original. Crane, Frank W. Corfu.
 Founder. Jackson, Albert P. Oakfield.
 Stone, Frank L. Le Roy.
 Founder. Townsend, Morris W. Bergen.

5

LIVINGSTON COUNTY.

- Original. Briggs, William H. Hemlock Lake.
 Brown, J. P. Nunda.
 Hagey, J. M. Mount Morris.
 Jones, George H. Fowlerville.
 Original. Menzie, R. J. Caledonia.
 Original. Moyer, Frank H. Moscow.

6

MONROE COUNTY.

- Curtis, D. F. Rochester.
 Original. Dunning, J. D. Webster.
 Fenno, Henry M. Rochester.
 Goler, George W. Rochester.
 Founder. Hovey, B. L. Rochester.
 Jones, S. Case. Rochester.
 Founder. Moore, Edward M. Rochester.
 Original. Moore, Edward M., Jr. Rochester.
 Original. Moore, Richard Mott. Rochester.

* Deceased.

Original. O'Hare, Thomas A. Rochester.
 Reitz, Charles. Webster.
 Schopp, Justin H. Rochester.
 Snook, George M. Parma.
 Stocksclaeder, P. Rochester.

14

NIAGARA COUNTY.

Eddy, George P. Lewiston.
 Huggins, William Q. Sanborn.
 Moore, Allan N. Lockport.

3

ONTARIO COUNTY.

Founder. Bentley, Francis R. Cheshire.
 De Laney, John Pope. Geneva.
 Pratt, Frank R. Manchester.
 Founder. Simmons, E. W. Canandaigua.
 Original. Vanderhoof, Frederick D. Phelps.

5

ORLEANS COUNTY.

Founder. Chapman, James. Medina.
 Original. Taylor, John H. Holley.
 Founder. Tompkins, H. C. Knowlesville.

3

STEUBEN COUNTY.

Chittenden, Daniel J. Addison.
 Conderman, George. Hornellsville.
 Original. Dunn, Jeremiah. Bath.
 Original. Ellison, Metler D. Canisteo.
 Gilbert, Horatio. Hornellsville.
 Original. Jamison, John S. Hornellsville.
 Parkhill, C. S. Hornellsville.
 Rudgers, Denton W. Hornellsville.
 Walker, James E. Hornellsville.
 Wallace, Edwin E. Jasper.

10

WAYNE COUNTY.

- Founder. Arnold, J. Newton. Clyde.
 Brandt, J. S. Ontario Center.
 Founder. Colvin, Darwin. Clyde.
 Horton, David B. Red Creek.
 Original. *Ingraham, Samuel. Palmyra.
 Original. Landon, Newell E. Newark.
 Nutten, Wilbur F. Newark.

7

WYOMING COUNTY.

- Original. Ellinwood, A. G. Attica.
 Greene, Cordelia A. Castile.
 Hulette, G. S. Arcade.
 Lusk, Zera J. Warsaw.
 Mann, Carl C. Warsaw.
 Original. Palmer, George M. Warsaw.
 Original. Rae, Robert. Portageville.
 Wilson, M. J. Warsaw.

8

YATES COUNTY.

- Oliver, William. Penn Yan.

1

FIFTH OR SOUTHERN DISTRICT.

DUTCHESS COUNTY.

- Atwood, J. W. Fishkill-on-Hudson.
 Baker, Benjamin N. Rhinebeck.
 Original. Barnes, Edwin. Pleasant Plains.
 Original. *Bates, Xyris T. Poughkeepsie.
 Original. Bayley, Guy Carleton. Poughkeepsie.
 Founder. Coddington, George H. Amenia.
 Founder. Cramer, William. Poughkeepsie.

* Deceased.

- Original. Fletcher, Charles L. Wing's Station.
 Julian, John M. Pleasant Valley.
 Founder. Leroy, Irving D. Pleasant Valley.
 Founder. Pultz, Monroe T. Stanfordville.
 Founder. Van Etten, Cornelius S. Rhinebeck.

12

KINGS COUNTY.

- Alleman, L. A. W. Brooklyn.
 Baker, Frank R. Brooklyn.
 Founder. Baker, George W. Brooklyn, E. D.
 Bierwirth, Julius C. Brooklyn.
 Original. Biggam, William H., Jr. Brooklyn.
 Original. Brundage, Amos H. Brooklyn.
 Coffin, Lawrence. Brooklyn.
 Original. Conway, John Francis. Brooklyn.
 Essig, George. Brooklyn.
 Feeley, James F. Brooklyn, E. D.
 Hicks, Edward E. Brooklyn.
 Hughes, Peter. Brooklyn.
 Hull, Thomas H. Brooklyn.
 Original. Jenkins, John A. Brooklyn, E. D.
 Jewett, F. A. Brooklyn.
 Original. Leighton, Nathaniel W. Brooklyn.
 Little, Frank. Brooklyn.
 Original. Lloyd, T. Mortimer. Brooklyn.
 Original. McCollom, William. Brooklyn.
 Milbury, Frank S. Brooklyn.
 Newman, George W. Brooklyn.
 Original. North, Nelson L. Brooklyn.
 Ostrander, George A. Brooklyn.
 Page, Emmett D. Brooklyn.
 Original. Paine, Arthur R. Brooklyn.
 Original. Pray, S. R. Brooklyn.
 Price, Henry R. Brooklyn.
 Raynor, F. C. Brooklyn.
 Richardson, John E. Brooklyn.
 Risch, Henry F. W. Brooklyn.
 Rochester, Thomas M. Brooklyn.
 Founder. Rushmore, John D. Brooklyn.
 Original. Russell, William G. Brooklyn.
 Founder. Segur, Avery. Brooklyn.

- Original. Shepard, A. Warren. Brooklyn.
 Original. Sizer, Nelson Buell. Brooklyn.
 Founder. Squibb, Edward H. Brooklyn.
 Founder. Squibb, Edward R. Brooklyn.
 Original. Steinke, C. O. H. Brooklyn.
 Sullivan, John D. Brooklyn.
 *Thayer, William Henry. Berkshire, Mass.
 Thwing, Clarence. Fort Wrangle, Alaska.
 Waterworth, William. Brooklyn.
 Wieber, Adolph. Brooklyn.
 Original. Williams, William H. Brooklyn.
 Woodworth, E. E. Brooklyn.
 Founder. Wyckoff, Richard M. Brooklyn.

47

NEW YORK COUNTY.

- Adams, Calvin Thayer. New York.
 Agramonte, E. V. New York.
 Alexander, Samuel. New York.
 Anderson, R. Harcourt. New York.
 Original. Arcularius, Lewis. New York.
 Original. Arnold, Edmund S. F. New York.
 Arnold, Glover C. New York.
 Baldwin, F. A. New York.
 Bennett, Thomas L. New York.
 Original. Biggs, Herman M. New York.
 Bissell, Joseph B. New York.
 Founder. Bozeman, Nathan. New York.
 Bozeman, Nathan G. New York.
 Original. Bryant, Joseph D. New York.
 Bryant, Percy. New York.
 Original. Bull, Charles Steadman. New York.
 Bull, William T. New York.
 Campbell, Clarence G. New York.
 Carr, William. New York.
 Original. Carter, H. Skelton. New York.
 Original. Chauveau, Jean F. New York.
 Original. Chrystie, T. M. Ludlow. New York.
 Coley, William B. New York.
 Founder. Conover, William S. New York.

*Deceased

- Dalton, W. R. I. New York.
 Davis, J. Griffith. New York.
 Davis, Robert C. New York.
 DeGarmo, W. B. New York.
 DeLandeta, J. B. New York.
 Delphey, Eden V. New York.
 Dench, Edward B. New York.
 Original. Denison, C. Ellery. New York.
 Original. Denison, Ellery. New York.
 Founder. Dennis, Frederic S. New York.
 Original. Du Bois, Matthew B. New York.
 Dudley, A. Palmer. New York.
 Dunham, Edward K. New York.
 Original. Eastman, Robert W. New York.
 Einhorn, Max. New York.
 Original. Eliot, Ellsworth. New York.
 Enders, Thomas Burnham. New York.
 Erdmann, John F. New York.
 Farrington, Joseph O. New York.
 Ferguson, Frank. New York.
 Founder. Flint, Austin. New York.
 Flint, Austin, Jr. New York.
 Founder. Flint, William H. New York.
 Fordyce, John A. New York.
 Foster, George V. New York.
 French, John Hendon. 43 W. 51stth St., New York.
 Fridenberg, Edward. New York.
 Gleitsmann, J. W. New York.
 Gottlieb, J. Adelphi. New York.
 Founder. Gouley, John W. S. New York.
 Gray, Joseph F. New York.
 Hammond, Frederick Porter. New York.
 Harris, E. Eliot. New York.
 Original. Harrison, George Tucker. New York.
 Hepburn, Neil J. New York.
 Hillis, Thomas J. New York.
 Founder. Hodgman, Abbott. New York.
 Hubbard, Dwight L. New York.
 Jackson, Charles W. New York.
 Founder. Janeway, Edward G. New York.
 Janvrin, J. E. New York.
 Jenkins, William T. New York.

- Judson, A. B. New York.
 Kalish, Richard. New York.
 Kelly, Thomas. New York.
 Kindred, John Joseph. New York.
 Knipe, George. New York.
 Knopf, S. A. New York.
 Founder. Leale, Charles A. New York.
 Lewis, Robert. New York.
 Lichtschein, Louis. New York.
 Little, Albert H. New York.
 Lockwood, Charles E. New York.
 Ludlow, Ogden C. New York.
 Lukens, Anna. New York.
 Lusk, William C. New York.
 Lynch, Patrick J. New York.
 MacGregor, James R. New York.
 Mackenzie, J. C. New York.
 Mason, Edwin Willard. New York.
 McAlpin, D. Hunter, Jr. New York.
 McBurney, Charles. New York.
 McGauran, George D. New York.
 McGillicuddy, T. J. New York.
 *McIlroy, Samuel H. New York.
 McLeod, Johnston. New York.
 Founder. McLeod, S. B. Wylie. New York.
 Original. *McLochlin, James A. New York.
 McNicholl, Thomas A. New York.
 Maher, J. J. E. New York.
 Founder. Manley, Thomas H. New York.
 Marshall, Francis F. New York.
 Meier, Gottlieb C. H. New York.
 Milliken, S. E. New York.
 Original. Miranda, Ramon L. New York.
 Moran, James. New York.
 Original. Murphy, John. New York.
 Original. Murray, Sandford J. New York.
 Original. Newman, Robert. New York.
 Founder. Nicoll, Henry D. New York.
 Original. Obendorfer, Isidor P. New York.
 O'Brien, M. Christopher. New York.

*Deceased.

- Oppenheimer, H. S. New York.
 Oppenheimer, Seymour. New York.
 Parker, Ransom J. New York.
- Original. Parsons, John. New York.
 Perry, John Gardner. New York.
 Phelps, Charles. New York.
- Original. Pooler, Hiram A. New York.
 Potter, E. Styles. New York.
- Founder. Purple, Samuel S. New York.
 Quinlan, Francis J. New York.
 Rathbone, Charles C. New York.
- Original. *Read, Ira B. New York.
 Ricketts, Benjamin M. Cincinnati, O.
 Reiley, Thomas F. New York.
 Roth, Julius A. New York.
- Founder. Sayre, Lewis A. New York.
 Sayre, Reginald H. New York.
 Seaman, Louis L. New York.
 Shaw, Henry B. New York.
 Shrady, Arthur M. New York.
 Shrady, John. New York.
 Shrady, John Eliot. New York.
 Silver, Henry M. New York.
 Simmons, Charles E. New York.
 Smith, A. Alexander. New York.
- Original. Smith, Samuel W. New York.
- Original. Smith, Stephen. New York.
 Spicer, Walter E. New York.
 Stearns, Henry S. New York.
 Stewart, Douglas H. New York.
 Stewart, F. E. New York.
 Stewart, George D. New York.
 Strong, Cyrus J. New York.
 Syms, Parker. New York.
- Founder. Thomas, T. Gaillard. New York.
 Thompson, Von Beverhout. New York.
 Trautman, Alex. New York.
 *Traux, J. G. New York.
- Founder. Tucker, Carlos P. New York.
 Vincent, Ludger C. New York.
 Wainwright, John W. New York.

*Deceased.

- Original. Wallach, Joseph N. New York.
 Walsh, Simon J. New York.
 Wandless, Henry W. New York.
- Founder. *Ward, Charles S. New York.
 Washburn, Wickes. New York.
 Weston, Albert T. New York.
 White, Charles B. New York.
 White, J. Blake. New York.
- Founder. Wiener, Joseph. New York.
 Wiggin, Frederick Holme. New York.
 Woodend, William E. New York.
 Woodward, J. H. New York.
- Original. Wyeth, John A. New York.
 Yankauer, Sidney. New York.

161

ORANGE COUNTY.

- Conner, Milton C. Middletown.
 Pillsbury, Burke. Middletown.
 Swartwout, H. B. Port Jervis.
 Townsend, Charles E. Newburgh.
 Vanderveer, J. C. Monroe.
 *Vanderveer, J. R. Monroe.
 Woodhull, Edward D. Monroe.

7

PUTNAM COUNTY.

- Founder. Murdock, George W. Cold Spring.
 Founder. Young, William. Cold Spring.

2

QUEENS COUNTY.

- Mott, Valentine. Roslyn.
 Original. Rave, Edward G. Hicksville.

2

RICHMOND COUNTY.

- Johnston, Henry C. New Brighton.
 Martindale, F. E. Port Richmond.
 Walser, William C. West New Brighton.

3

*Deceased.

SUFFOLK COUNTY.

- Original. Chambers, Martin L. Port Jefferson.
 Hulse, William A. Bay Shore.
 Original. Lindsay, Walter. Huntington.
 Overton, Frank. Patchogue.

4

SULLIVAN COUNTY.

- Crocker, Edwin. Narrowsburgh.
 McWilliams, F. A. Monticello.
 Original. Munson, J. A. Woodburne.
 Piper, Charles W. Wurtsborough.
 Stearns, Benjamin W. Long Eddy.
 Whitcomb, John L. C. Liberty.

6

ULSTER COUNTY.

- Gage-Day, Mary. Kingston.
 Original. HoornBeek, Philip Du Bois. Wawarsing.
 Original. Hühne, Frederick. Rondout.
 Reed, Albert. Highland.
 Original. Van Hovenberg, Henry. Kingston.
 Ward, John J. Ellenville.

6

WESTCHESTER COUNTY.

- Acker, Thomas J. Croton-on-Hudson.
 Original. Banks, George B. Hartsdale.
 Original. Brush, Edward F. Mount Vernon.
 Original. Coutant, Richard B. Tarrytown.
 Granger, William D. Bronxville.
 Founder. Hannan, J. C. Port Chester.
 Original. Lyons, G. A. New Rochelle.
 Porteous, J. Lindsay. Yonkers.
 Original. Schmid, H. Ernst. White Plains.
 Small, John W. Yonkers.
 Original. Southworth, Richmond Joseph. Washington, D. C.
 Original. Wells, William L. New Rochelle.

12

*Deceased.

[illegible]

ALPHABETICAL LIST OF FELLOWS.

- Aberdein, Robert, Warren and Fayette Sts., Syracuse, Onondaga Co. Original.
- Abrams, H. C., Newtonville, Albany Co.
- Acker, Thomas J., Croton-on-Hudson, Westchester Co.
- Adams, Calvin Thayer, 21 E. 28th St., New York, New York Co.
- Agramonte, E. V., 145 W. 66th St., New York, New York Co.
- Alexander, Samuel, 5 W. 58th St., New York, New York Co.
- Alleman, L. A. W., 64 Montague St., Brooklyn, Kings Co.
- *Allen, Amos, Grafton, Rensselaer Co. Original.
- Allen, Charles S., Rensselaer, Rensselaer Co. Founder.
- Allen, Henry J., Corinth, Saratoga Co.
- Allen, William L., Rensselaer, Rensselaer Co.
- Ames, Edward, 123 E. Lovell St., Kalamazoo, Mich. Founder.
- Anderson, R. Harcourt, 108 W. 40th St., New York, New York Co.
- Andrews, Lewis B., Byron, Genesee Co.
- Arcularius, Lewis, 121 E. 25th St., New York, New York Co. Original.
- Arnold, Edmund S. F., Carroll Avenue, Newport, R. I. Original.
(Retired list.)
- Arnold, Glover C., 115 E. 30th St., New York, New York Co.
- Arnold, J. Newton, Clyde, Wayne Co. Founder.
- Atwood, H. L., Collins Center, Erie Co. Original.
- Atwood, John W., Fishkill-on-Hudson, Dutchess Co.
- Ayer, W. L., Owego, Tioga Co. Original.
- Ayers, Douglas, Fort Plain, Montgomery Co. Original.
- Ayling, William J., 606 E. Fayette St., Syracuse, Onondaga Co.
- Bacon, Charles G., Fulton, Oswego Co. (Retired list.)
- Bagg, Moses M., Utica, Oneida Co. Original. (Retired list.)
- Bailey, Theodore P., 95 Eagle St., Albany, Albany Co. Founder.
- Baker, Benjamin N., Rhinebeck, Dutchess Co.
- Baker, Frank R., 540 Bedford Ave., Brooklyn, E. D., Kings Co.
- Baker, George W., 540 Bedford Ave., Brooklyn, E. D., Kings Co.
Founder.
- Baldwin, F. A., 129 W. 77th St., New York, New York Co.
- Banks, George B., Hartsdale, Westchester Co. Original. (Retired list.)
- Barnes, Edwin, Pleasant Plains, Dutchess Co. Original.

*Deceased.

- *Bartlett, Fred W., 523 Delaware Ave., Buffalo, Erie Co. Original.
 Barton, Lyman, Willsborough, Essex Co. Founder. (Retired list.)
 Barton, L. G., Willsborough, Essex Co.
 Bates, Nelson W., Central Square, Oswego Co. (Retired list.)
 *Bates, Xyris T., Poughkeepsie, Dutchess Co. Original.
 Bayley, Guy Carleton, Poughkeepsie, Dutchess Co. Original.
 Bayliss, A. W., 592 Spring St., Buffalo, Erie Co.
 Baynes, Joseph E., 2419 5th Ave., Troy, Rensselaer Co.
 Beers, John E., Danby, Tompkins Co. Founder.
 Bellows, George A., Waterloo, Seneca Co.
 Bemus, Morris N., Jamestown, Chautauqua Co.
 Bemus, William Marvin, Jamestown, Chautauqua Co.
 Benham, John C., Hudson, Columbia Co. Original.
 Bennett, Arthur G., 213 Franklin St., Buffalo, Erie Co.
 Bennett, Thomas L., 7 E. 87th St., New York, New York Co.
 Bentley, F. R., Cheshire, Ontario Co. Original. (Retired list.)
 Bergtold, W. H., 56 Allen St., Buffalo, Erie Co.
 Bierwith, Julius C., 137 Montague St., Brooklyn, Kings Co.
 Biggam, William H., Jr., 1197 Dean St., Brooklyn, Kings Co. Original.
 Biggs, Chauncey P., Ithaca, Tompkins Co.
 Biggs, H. M., 5 W. 58th St., New York, New York Co. Original.
 Birdsall, Gilbert, North Brookfield, Madison Co. Original.
 Bissell, James H., 2187 5th Ave., Troy, Rensselaer Co.
 Bissell, Joseph B., 15 W. 58th St., New York, New York Co.
 Blair, Louis P., McDonough, Chenango Co. Original.
 Blake, Clarence R., Northville, Fulton Co. Original.
 Blanchard, R. N., Jamestown, Chautauqua Co.
 Blumer, G. Alder, State Hospital, Utica, Oneida Co. Original.
 Boies, Loren F., 286 Howard Ave., Buffalo, Erie Co. Original.
 Bonesteel, H. F., Mill St., Troy, Rensselaer Co.
 Bonesteel, William N., Mill St., Troy, Rensselaer Co. Founder. (Retired list.)
 Bontecou, Reed B., 82 4th St., Troy, Rensselaer Co. Original.
 *Booth, Wilbur H., 172 Genesee St., Utica, Oneida Co. Original.
 Boyce, Elias B., Averill Park, Rensselaer Co.
 Bozeman, Nathan, 140 Madison Ave., New York, New York Co. Founder.
 Bozeman, Nathan G., 140 Madison Ave., New York, New York Co.
 Bradford, George D., Homer, Cortland Co.
 Bradley, O. Howard, Hudson, Columbia Co.
 Brandt, J. S., Ontario Center, Wayne Co.
 Briggs, William H., Hemlock Lake, Livingston Co. Original.
 Brooks, Leroy J., Norwich, Chenango Co. Original.
 Brown, George L., D. S. Morgan Building, Buffalo, Erie Co.
 Brown, J. P., Nunda, Livingston Co.
 Brown, Ulysses H., 312 Warren St., Syracuse, Onondaga Co.

- Brundage, A. H., 609 Madison St., Brooklyn, Kings Co. Original. (Retired list.)
- Brush, Edward F., Mount Vernon, Westchester Co. Original.
- Bryant, J. D., 54 W. 36th St., New York, New York Co. Original.
- Bryant, Percy, Manhattan State Hospital, Ward's Island, New York, New York Co.
- Bull, Charles Stedman, 47 W. 36th St., New York, New York Co. Original.
- Bull, William T., 35 W. 35th St., New York, New York Co.
- Bullard, T. E., Schuylerville, Saratoga Co.
- Burbeck, Chas. H., 91 First St., Troy, Rensselaer Co. Founder.
- Burghardt, Francis Augustus, 632 Elm St., Buffalo, Erie Co. (Retired list.)
- Burhyte, O. W., Brookfield, Madison Co.
- Buswell, Henry C., 868 Main St., Buffalo, Erie Co.
- Cady, George M., Nichols, Tioga Co.
- Cahill, John T., Hoosick Falls, Rensselaer Co.
- Caldwell, Nathan A., Hageman's Mills, Montgomery Co.
- Campbell, A. J., 332 Warren St., Syracuse, Onondaga Co.
- Campbell, Clarence G., 34 E. 49 St., New York, New York Co.
- Carpenter, Henry W., Oneida, Madison Co. Original.
- Carr, William, 35 W. 46th St., New York, New York Co.
- Carter, H. S., 130 E. 24th St., New York, New York Co. Original.
- Cavana, Martin, Oneida, Madison Co.
- Chambers, Martin L., Port Jefferson, Suffolk Co. Original. (Retired list.)
- Chapman, James, Medina, Orleans Co. Founder.
- Chauveau, Jean F., 31 W. 60th St., New York, New York Co. Original.
- Chittenden, Daniel J., Addison, Steuben Co.
- Chittenden, Joseph H., Binghamton, Broome Co. Founder.
- Chrystie, T. M. Ludlow, 216 W. 46th St., New York, New York Co. Original.
- Church, B. A., Oneonta, Otsego Co.
- Church, George T., Saratoga, Saratoga Co.
- Church, Thomas C., Valley Falls, Rensselaer Co.
- Churchill, Alonzo, 189 Genesee St., Utica, Oneida Co. (Retired list.)
- Clark, George W., Waterloo, Seneca Co.
- Clum, Franklin D., Cheviot, Columbia Co.
- Codding, George H., Amenia, Dutchess Co. Founder.
- Coffin, Lawrence, 473 Bedford Ave., Brooklyn, Kings Co.
- Cohen, Bernard, 497 Niagara St., Buffalo, Erie Co.
- Coley, William B., 5 Park Ave., New York, New York Co.
- Colvin, Darwin, Clyde, Wayne Co. Founder.
- Comstock, George F., Saratoga Springs, Saratoga Co. Founder.
- Conderman, George, Hornellsville, Steuben Co.
- Congdon, Charles E., 1034 Jefferson St., Buffalo, Erie Co.
- Conkling, George, Durham, Greene Co. Original.
- Conner, Milton C., Middletown, Orange Co.
- Conover, William S., 240 W. 132d St., New York, New York Co. Founder.

- Conway, John Francis, cor. Buffalo Ave. and Union St., Brooklyn, Kings Co. Original.
- Cooke, Almon H., 410 Ashland Ave., Buffalo, Erie Co.
- Cooley, F. L., 210 First St., Oswego, Oswego Co.
- Cooley, R. N., Hannibal Centre, Oswego Co.
- Cooper, William C., 81 3d St., Troy, Rensselaer Co. Original.
- Cott, George F., 531 Mooney-Brisbane Bldg., Buffalo, Erie Co.
- Coutant, Richard B., Tarrytown. Westchester Co. Original.
- Cramer, William, 136 Mansion St., Poughkeepsie, Dutchess Co. Founder.
- Crane, Frank W., Corfu, Genesee Co. Original.
- Crawe, J. Mortimer, Watertown, Jefferson Co. Founder.
- Crocker, Edwin, Narrowsburg, Sullivan Co.
- Crombie, Walter C., Mechanicsville, Saratoga, Co. Original.
- *Cronyn, John, 55 W. Swan St., Buffalo, Erie Co. Founder.
- Crosby, Alexander H., Lowville, Lewis Co.
- Crounse, Andrew C., Melrose, Rensselaer Co.
- Curtis, D. F., 102 South Ave., Rochester, Monroe Co.
- Curtis, P. C., Round Lake, Saratoga Co.
- Dalton, W. R. I., 477 W. 145th St., New York, New York Co.
- Daniels, Clayton M., 868 Main St., Buffalo, Erie Co. Original.
- D'Avignon, Francis J., Au Sable Forks, Essex Co. Original.
- Davis, J. Griffith, 200 W. 14th St., New York, New York Co.
- Dayton, C. L., 246 Dearborn St., Buffalo, Erie Co. (Retired list.)
- Dean, Harmon J., Brocton, Chautauqua Co. Founder.
- DeGarmo, W. B., 56 W. 36th St., New York, New York Co.
- DeLandeta, J. B., 228 W. 44th St., New York, New York Co.
- DeLaney, John Pope, Geneva, Ontario Co.
- Delphey, Eden V., 404 W. 57th St., New York, New York Co.
- Dench, Edward B., 17 W. 46th St., New York, New York Co.
- Denison, Charles Ellery, 215 W. 34th St., New York, New York Co. Original.
- Denison, Ellery, 113 W. 12th St., New York, New York Co. Original.
- Dennis, Frederick S., 542 Madison Ave., New York, New York Co. Founder.
- De Witt, Byron, Oswego, Oswego Co. Original. (Retired list.)
- Dickinson, M. D., Troy, Rensselaer Co.
- Dickson, Thomas Gordon, Troy, Rensselaer Co.
- Didama, Emory A., Cortland, Cortland Co.
- Didama, Henry D., 112 S. Salina St., Syracuse, Onondaga Co. Founder.
- Dodge, Amos P., Oneida Castle, Oneida Co.
- Dodge, Lyndehurst C., Rouse's Point, Clinton Co. Founder.
- Donohue, Florince O., 410 Warren St., Syracuse, Onondaga Co. Original.
- Dorland, Elias T., 388 Elmwood Ave., Buffalo, Erie Co. Original.
- Douglas, Edgar H., Little Falls, Herkimer Co.

- Douglas, George, Oxford, Chenango Co.
Douglass, James W., Booneville, Oneida Co.
Drake, D. Delos, Johnstown, Fulton Co.
Drake, Frank C., Oneida, Madison Co.
Drake, James B., Hancock, Delaware Co.
Du Bois, Matthew B., 37 E. 39th St. New York, New York Co. Original.
Dudley, A. Palmer, 678 Madison Ave., New York, New York Co.
Dudley, Dwight, Maine, Broome Co.
Dunham, Edward K., 338 E. 26th St., New York, New York Co.
*Dunlop, John J., Waterford, Saratoga Co. Original.
Dunn, Jeremiah, Bath, Steuben Co. Original.
Dunning, J. D., Webster, Monroe Co. Original.
*Eastman, L. O., Union, Broome Co.
Eastman, Robert W., 140 W. 76th St., New York, New York Co. Original.
Eddy, George P., Lewiston, Niagara Co.
Edwards, Amos S., 1506 N. Salina St., Syracuse, Onondaga Co. Original.
Edwards, George A., 204 E. Jefferson St., Syracuse, Onondaga Co. Original.
Edwards, John, Gloversville, Fulton Co.
Einhorn, Max, 20 E. 63d St., New York, New York Co.
Eldridge, Stuart, Yokohama, Japan. (Non-resident.)
Eliot, Ellsworth, 48 W. 36th St., New York, New York Co. Original.
Ellinwood, A. G., Attica, Wyoming Co. Original.
Ellison, Metler D., Canisteo, Steuben Co. Original.
Ellsworth, Victor A., 41 Waltham St., Boston, Mass.
Enders, Thomas Burnham, Highland St., Hartford, Conn.
Erdmann, John F., 149 W. 44th St., New York, New York Co.
Essig, George, 488 Bedford Ave., Brooklyn, Kings Co.
Farnham, LeRoy D., Binghamton, Broome Co.
Farrington, John M., Binghamton, Broome Co.
Farrington, Joseph O., 1991 Madison Ave., New York, New York Co.
Feeley, James F., 296 Lorimer St., Brooklyn, E. D., Kings Co.
Fenno, Henry Marshall, 34 Hamilton Place, Rochester, Monroe Co.
Ferguson, E. D., 1 Union Place, Troy, Rensselaer Co. Founder.
Ferguson, Frank, 20 W. 38th St., New York, New York Co.
Fielding, F. G., Glens Falls, Warren Co.
Finder, William Jr., 2 Union Place, Troy, Rensselaer Co. Founder.
Fisher, J. C., Elmira, Chemung Co.
Fitzgerald, David J., Glens Falls, Warren Co.
Fitzgerald, John F., State Custodial Asylum, Rome, Oneida Co.
Fletcher, Charles L., Wing's Station, Dutchess Co. Original.
Flickinger, John, Trumansburg, Tompkins Co.
Flint, Austin, 60 E. 34th St., New York, New York Co. Founder.
Flint, Austin, Jr., 18 E. 45th St., New York, New York Co.
Flint, William H., Ridgefield, Conn. Founder. (Retired list).

*Deceased.

- Fordyce, John A., 66 Park Ave., New York, New York Co.
 Foster, George V., 109 E. 18th St., New York, New York Co.
 Frederick, Carlton C., 64 Richmond Ave., Buffalo, Erie Co.
 French, John Hendon, 43 W. 51st St., New York, New York Co.
 French, S. H., Amsterdam, Montgomery Co.
 Fridenberg, Edward, 242 Lenox Ave., New York, New York Co.
 Fritts, Crawford Ellsworth, Hudson, Columbia Co.
 Fuller, Earl D., 66 Varick St., Utica, Oneida Co.
 Gage-Day, Mary, Kingston, Ulster Co.
 Garlock, William D., Little Falls, Herkimer Co.
 Getty, A. H., Athens, Greene Co.
 Gilbert, Horatio, Hornellsville, Steuben Co.
 Gleitsmann, J. W., 46 E. 25th St., New York, New York Co.
 Glidden, Charles H., Little Falls, Herkimer Co. Original.
 Goler, George W., 127 East Ave., Rochester, Monroe Co.
 Gordinier, Hermon C., 89 4th St., Troy, Rensselaer Co.
 Gottlieb, J. Adelphi, 304 W. 104th St., New York, New York Co.
 Gouley, J. W. S., 11 E. 43d St., New York, New York Co.
 Gow, Frank F., Schuylerville, Saratoga Co.
 Granger, William D., Bronxville (Vernon House), Westchester Co.
 Grant, Charles S., Saratoga Springs, Saratoga Co. Founder.
 Gravatt, Edwin J., 361 Second St., Troy, Rensselaer Co.
 Gray, Joseph F., 354 W. 29th St., New York, New York Co.
 Green, Stephen S., 426 Niagara St., Buffalo, Erie Co.
 Greene, Clark W., Binghamton, Broome Co.
 Greene, Cordelia A., Castile, Wyoming Co.
 Greene, DeWitt C., 1125 Main St., Buffalo, Erie Co. Original.
 *Greene, Joseph C., 124 Swan St., Buffalo, Erie Co. Founder.
 Greenman, C. E., 179 1st St., Troy, Rensselaer Co.
 Guy, J. D., Chenango Forks, Broome Co.
 Hagadorn, William, Gilboa, Schoharie Co. Original.
 Hagey, J. M., Mount Morris, Livingston Co.
 Hammond, Frederick P., 143 E. 117th St., New York, New York Co.
 Hannan, James C., Port Chester, Westchester Co. Founder.
 Hannan, Thomas H., Hoosick Falls, Rensselaer Co.
 Harrington, D. W., 1430 Main St., Buffalo, Erie Co. Original.
 Harris, E. Eliot, 33 W. 93d St., New York, New York Co.
 Harrison, George Tucker, 221 W. 23d St., New York, New York Co.
 Original.
 Harvie, J. B., 6 Clinton Place, Troy, Rensselaer Co. Founder.
 Hatch, C. A., 10 E. Onondaga St., Syracuse, Onondaga Co. Original.
 Hayd, Herman E., 493 Delaware Ave., Buffalo, Erie Co.
 Hayes, William E., Frankfort, Herkimer Co.
 Haynes, John U., 103 Mohawk St., Cohoes, Albany Co.
 Head, Adelbert D., 202 E. Genesee St., Syracuse, Onondaga Co.
 Founder.
 Heimstreet, Thomas B., 14 Division St., Troy, Rensselaer Co. Original.

* Deceased.

- Hendrick, Henry C., McGraw, Cortland Co. Founder.
Henning, Thomas J., Glens Falls, Warren Co.
Hepburn, Neil J., 369 W. 23d St., New York, New York Co.
Hicks, Edward E., 921 Jefferson Ave., Brooklyn, Kings Co.
Higgins, F. W., Cortland, Cortland Co.
Hillis, Thomas J., 51 Charlton St., New York, New York Co.
Himmelsbach, George A., 30 12th St., Buffalo, Erie Co.
Hodgman, Abbott, 141 E. 38th St., New York, New York Co. Founder.
*Hodgman, William H., 108 Caroline St., Saratoga Springs, Saratoga Co. Founder.
Hogeboom, Wm. L., Troy, Rensselaer Co.
Holcomb, O. A., Plattsburgh, Clinton Co.
HoornBeek, Philip Du Bois, Warwarsing, Ulster Co. Original. (Retired list.)
Horton, David B., Red Creek, Wayne Co.
Hough, F. P., Binghamton, Broome Co.
Houston, David W., 44 2d St., Troy, Rensselaer Co. Original.
Hovey, B. L., 34 N. Fitzhugh St., Rochester, Monroe Co. Founder.
Howard, Charles F., 1458 Main St., Buffalo, Erie Co.
Hoyer, F. F., Tonawanda, Erie Co. Founder.
Hubbard, Dwight L., 117 W. 93d St., New York, New York Co.
Hubbell, Alvin A., 212 Franklin St., Buffalo, Erie Co.
Hudson, George, Stillwater, Saratoga Co.
Huggins, William Q., Sanborn, Niagara Co.
Hughes, Peter, 275 Berry St., Brooklyn, Kings Co.
Hulette, G. S., Arcade, Wyoming Co.
Hühne, Frederic, Rondout, Ulster Co. Original.
Hull, Thomas H., 55 Lee Ave., Brooklyn, Kings Co.
Hulse, William A., Bay Shore, Suffolk Co.
Humphrey, J. F., Saratoga Springs, Saratoga Co.
Hunt, H. L., Orchard Park, Erie Co.
Hunt, James G., 5 Gardner Block, Utica, Oneida Co. Original.
Hunt, W. J., Glens Falls, Warren Co.
Huntley, James F., Oneida, Madison Co.
Hutton, M. B., Valley Falls, Rensselaer Co.
Ingraham, Henry D., 405 Franklin St., Buffalo, Erie Co.
*Ingraham, Samuel, Palmyra, Wayne Co. Original. (Retired list.)
Inlay, Erwin G., Saratoga Springs, Saratoga Co.
Jackson, Albert P., Oakfield, Genesee Co. Founder.
Jackson, Charles W., 130 W. 81st St., New York, New York Co.
Jackson, William H., Springville, Erie Co.
Jacobson, Nathan, 430 S. Salina St., Syracuse, Onondaga Co. Original.
Jamison, John S., Hornellsville, Steuben Co. Original.
Janeway, Edward G., 36 W. 40th St., New York, New York Co. Founder.
Janvrin, J. E., 191 Madison Ave., New York, New York Co.

*Deceased.

Jenkins, John A., 271 Jefferson Ave., Brooklyn, E. D., Kings Co
Original.

Jenkins, William T., 109 E. 26th St., New York, New York Co.

Jewett, F. A., 282 Hancock St., Brooklyn, Kings Co.

Jewett, Homer O., Cortland, Cortland Co. Founder. (Retired list.)

Johnson, Henry W., Hudson, Columbia Co.

Johnson, Ianthus G., Greenfield Center, Saratoga Co. Original.

Johnson, Parley H., Adams, Jefferson Co. Original.

Johnson, Richard G., Amsterdam, Montgomery Co. Original.

Johnston, Henry C., New Brighton, Richmond Co.

Jones, Allen A., 436 Franklin St., Buffalo, Erie Co.

Jones, George H., Fowlerville, Livingston Co.

Jones, S. Case, 21 East Ave., Rochester, Monroe Co.

Joslin, Albert A., Watertown, Jefferson Co.

Judson, A. B., 1 Madison Ave., New York, New York Co.

Julian, John M., Pleasant Valley, Dutchess Co.

Kalish, Richard, 36 W. 47th S., New York, New York Co.

Keefer, Charles W., Mechanicsville, Saratoga Co.

Kelley, Thomas, 357 W. 57th St., New York, New York Co.

Kenyon, Frank, Scipio, Cayuga Co.

Kenyon, M., King's Ferry, Cayuga Co. Original.

Kindred, John Joseph, 25 W. 45th St., New York, New York Co.

King, James K., Watkins, Schuyler Co.

Klock, Charles M., St. Johnsville, Montgomery Co.

Knapp, W. H., Binghamton, Broome Co.

Kneeland, Jonathan S., Onondaga, Onondaga Co. Founder. (Retired list.)

Knipe, George, 353 W. 24th St., New York, New York Co.

Kniskern, A. C., Mechanicsville, Saratoga Co.

Knopf, S. A., 955 Madison Ave., New York, New York Co.

LaBell, Martin J., Lewis, Essex Co. Original.

Laird, William R., 98 Wall St., Auburn, Cayuga Co. Original.

Lambert, John, Salem, Washington Co. (Retired list.)

Landon, Newell E., Newark, Wayne Co. Original.

Leale, Charles A., 604 Madison Ave., New York, New York Co.
Founder.

Leaning, John K., Cooperstown, Otsego Co. Founder.

Leffingwell, E. D., Watkins, Schuyler Co.

Leighton, N. W., 143 Taylor St., Brooklyn, E. D., Kings Co. Original.

LeRoy, Irving D., Pleasant Valley, Dutchess Co. Founder.

Lester, Elias, Seneca Falls, Seneca Co. Founder.

Lewis, LeRoy, Auburn, Cayuga Co.

Lewis, Robert, 14 E. 45th St., New York, New York Co.

Lichtschein, Louis, 653 Lexington Ave., New York, New York Co.

Lindsay, Walter, Huntington, Suffolk Co. Original.

Little, Albert H., 230 W. 42d St., New York, New York Co.

Little, Frank, 114 Montague St., Brooklyn, Kings Co.

Lloyd, T. Mortimer, 125 Pierrepont St., Brooklyn, Kings Co. Original.

- Lockwood, Charles E., 60 W. 38th St., New York, New York Co.
 Lockwood, J. W., Philmont, Columbia Co. Original.
 Lounsberry, Robert L., Binghamton, Broome Co.
 Ludlow, Ogden C., 2309 7th Ave., New York, New York Co.
 Lukens, Anna, 1068 Lexington Ave., New York, New York Co.
 Lusk, William C., 47 E. 34th St., New York, New York Co.
 Lusk, Zera J., Warsaw, Wyoming Co.
 Lyman, H. C., Sherburne, Chenango Co. Original.
 Lynch, Patrick J., 216 E. 13th St., New York, New York Co.
 Lyon, E. M., Plattsburgh, Clinton Co. Founder.
 Lyon, George E., Planter's Hotel, St. Louis, Mo. Original.
 Lyons, Edward L., 298 4th St., Troy, Rensselaer Co.
 Lyons, G. A., New Rochelle, Westchester Co. Original.
 Macfarlane, William A., Springville, Erie Co.
 MacGregor, James R., 1118 Madison Ave., New York, New York Co.
 Mackenzie, J. C., 432 W. 22d St., New York, New York Co.
 MacLaren, William Stevenson, Litchfield, Conn. (Non-resident.)
 Maclean, Donald, 72 Lafayette Ave., Detroit, Mich. (Non-resident.)
 Maher, J. J. E., 34 W. 25th St., New York, New York Co.
 Manley, Thomas H., 115 W. 49th St., New York, New York Co. Founder.
 Mann, Carl C., Warsaw, Wyoming Co.
 Marsden, W. R., 175 Columbia St., Utica, Oneida Co.
 Marsh, E. Frank, Fulton, Oswego Co.
 Marsh, James P., 1739 5th Ave., Troy, Rensselaer Co.
 Marshall, Francis F., 56 W. 56th St., New York, New York Co.
 Martin, John H., Otego, Otsego Co. Original.
 Martindale, F. E., Port Richmond, Richmond Co.
 Martine, Godfrey R., Glens Falls, Warren Co. Original.
 Mason, Edwin Willard, 213 W. 79th St., New York, New York Co.
 McAlpin, D. Hunter, Jr., 9 E. 55th St., New York, New York Co.
 McBurney, Charles, 28 W. 37th St., New York, New York Co.
 McCollom, William, 195 Lefferts Place, Brooklyn, Kings Co. Original.
 McDonald, George E., Schenectady, Schenectady Co. Original.
 McDougall, R. A., Duaneburg, Schenectady Co.
 McGann, Thomas, Wells, Hamilton Co.
 McGauran, George D., 319 W. 51st St., New York, New York Co.
 McGillicuddy, T. J., 783 Madison Ave., New York, New York Co.
 *McIlroy, Samuel H., 330 Alexander Ave., New York, New York Co.
 McLeod, Johnston, 329 W. 23d St., New York, New York Co.
 McLeod, S. B. Wylie, 329 W. 23d St., New York, New York Co. Founder.
 *McLochlin, James A., 157 W. 21st St., New York, New York Co.
 Original.
 McNicholl, Thomas A., 1919 7th Ave., New York, New York Co.
 McWilliams, F. A., Monticello, Sullivan Co.
 Meier, Gottlieb C. H., 126 E. 58th St., New York, New York Co.
 Menzie, R. J., Caledonia, Livingston Co. Original.

*Deceased.

- Meyer, George L., Stone Arabia, Montgomery Co.
 Michael, F. M., Binghamton, Broome Co.
 Milbury, Frank S., 215 Jefferson Ave., Brooklyn, Kings Co.
 Miles, George W., Oneida, Madison Co.
 Milliner, Frederick H., 785 Niagara St., Buffalo, Erie Co.
 Milliken, S. E., 640 Madison Ave., New York, New York Co.
 Miranda, Ramon L., 116 W. 64th St., New York, New York Co. Original.
 Montgomery, J. J., Luzerne, Warren Co.
 Montmarquet, J. D., Cohoes, Albany Co.
 Mooney, James J., 443 Niagara St., Buffalo, Erie Co.
 Moore, Allan N., Lockport, Niagara Co.
 Moore, Edward M., 74 S. Fitzhugh St., Rochester, Monroe Co. Founder.
 (Retired list.)
 Moore, Edward M., Jr., S. 74 Fitzhugh St., Rochester, Monroe Co.
 Original.
 Moore, Macdonald, Fredonia, Chautauqua Co.
 Moore, Richard Mott, 74 S. Fitzhugh St., Rochester, Monroe Co. Original.
 Moran, James, 333 W. 51st St., New York, New York Co.
 Morehouse, E. W., 199 2d St., Troy, Rensselaer Co.
 Moriarta, Douglas C., Saratoga Springs, Saratoga Co.
 Morrow, William B., Walton, Delaware Co.
 Mott, Valentine, Roslyn, L. I.
 Moyer, Frank H., Moscow, Livingston Co. Original.
 Mudge, Selden J., Olean, Cattaraugus Co.
 Muir, William Scott, Truro, Nova Scotia. (Non-resident.)
 Mulford, Henry J., 466 Franklin St., Buffalo, Erie Co.
 Munger, Charles, Knoxborough, Oneida Co.
 Munson, J. A., Woodbourne, Sullivan Co. Original.
 Munson, W. W., Otisco, Onondaga Co. Original.
 Murdock, George W., Cold Spring, Putnam Co. Founder.
 Murphy, Grace A., 192 Third St., Troy, Rensselaer Co.
 Murphy, John, 233 E. 35th St., New York, New York Co. Original.
 Murray, S. J., 133 W. 87th St., New York, New York Co. Original.
 Newman, George W., 234 Leonard St., Brooklyn, Kings Co.
 Newman, Robert, 64 W. 36th St., New York, New York Co. Original.
 Nichols, Calvin E., 25 1st St., Troy, Rensselaer Co. Founder.
 Nichols, William H., West Sand Lake, Rensselaer Co. Founder.
 Nicoll, Henry D., 51 E. 57th St., New York, New York Co. Founder.
 Nold, John B., Utica, Oneida Co. (Retired list.)
 North, Nelson L., 627 Bedford Ave., Brooklyn, Kings Co. Original.
 Noyes, James B., New Berlin, Chenango Co.
 Nutten, Wilbur F., Newark, Wayne Co.
 Obendorfer, Isador P., 1037 Lexington Ave., New York, New York Co.
 Original.
 O'Brien, M. Christopher, 161 W. 122d St., New York, New York Co.
 O'Hare, Thomas A., 157 State St., Rochester, Monroe Co. Original.
 Oliver, William, Penn Yan, Yates Co.

- Oppenheimer, H. S., 16 E. 32d St., New York, New York Co.
 Oppenheimer, Seymour, 706 Madison Ave., New York, New York Co.
 Orton, John G., Binghamton, Broome Co. Founder.
 Ostrander, George A., 61 Greene Ave., Brooklyn, Kings Co.
 Overton, Frank, Patchogue, Suffolk Co.
 Packer, Thurston G., Smyrna, Chenango Co.
 Page, Emmett D., 304 Washington Ave., Brooklyn, Kings Co.
 Paine, Arthur R., 99 Lafayette Ave., Brooklyn, Kings Co. Original.
 Palmer, F. A., Mechanicsville, Saratoga Co.
 Palmer, George M., Warsaw, Wyoming Co. Original.
 Palmer, Henry C., cor. Genesee and Hopper Sts., Utica, Oneida Co.
 Parent, J. S., Bирchton, Saratoga Co.
 Parker, Ransom J., 130 Lexington Ave., New York, New York Co.
 Parkhill, C. S., Hornellsville, Steuben Co.
 Parsons, Israel, Marcellus, Onondaga Co. Founder.
 Parsons, John, Kingsbridge, New York, New York Co. Original.
 Perry, John Gardner, 48 E. 34th St., New York, New York Co.
 Phelan, Francis, 1629 Fifth Ave., Troy, Rensselaer Co.
 Phelps, Charles, 34 W. 37th St., New York, New York Co.
 Phelps, William C., 146 Allen St., Buffalo, Erie Co.
 Pierce, Edward A., Binghamton, Broome Co.
 Pierson, George E., Kirkwood, Broome Co. (Retired list.)
 Pillsbury, Burke, Middletown, Orange Co.
 Piper, Charles W., Wurtsborough, Sullivan Co.
 Pohlman, Julius, 382 Franklin St., Buffalo, Erie Co.
 Pooler, Hiram A., 34 Gramercy Park, New York, New York Co. Original.
 (Retired list.)
 Porteous, J. Lindsay, 83 Warburton Ave., Yonkers, Westchester Co.
 Porter, H. N., 1910 Harewood Ave., Washington, D. C. Founder.
 (Retired list.)
 Potter, E. Styles, 64 W. 55th St., New York, New York Co.
 Pratt, Frank R., Manchester, Ontario Co.
 Pray, S. R., 139 South 9th St., Brooklyn, Kings Co. Original.
 Price, Henry R., 485 Franklin Ave., Brooklyn, Kings Co.
 Pultz, Monroe T., Stanfordville, Dutchess Co. Founder.
 Purple, S. S., 36 W. 22d St., New York, New York Co. Founder.
 Putnam, Frederick W., Binghamton, Broome Co. Founder.
 Quinlan, Francis J., 33 W. 38th St., New York, New York Co.
 Rae, Robert, Portageville, Wyoming Co. Original.
 Rathbone, Charles C., 60 W. 47th St., New York, New York Co.
 Rave, Edward G., Hicksville, Queens Co. Original.
 Raynor, F. C., 163 Clinton St., Brooklyn, Kings Co.
 *Read, Ira B., 2074 Fifth Ave., New York, New York Co.
 Reagles, James, Schenectady, Schenectady Co. Original.
 Reed, Albert, Highland, Ulster Co.
 Reese, Frank D., Cortland, Cortland Co.

- Reid, Christopher C., Rome, Oneida Co.
 Reid, W. B., Rome, Oneida Co.
 Reiley, Thomas F., 318 W. 141st St., New York, New York Co.
 Reitz, Charles, Webster, Monroe Co.
 Reynolds, Tabor B., Saratoga Springs, Saratoga Co. Founder.
 Richards, Charles B., Binghamton, Broome Co. Founder.
 Richardson, John E., 127 S. Oxford St., Brooklyn, Kings Co.
 Ricketts, Benjamin M., 137 Broadway, Cincinnati, O. Original.
 Risch, Henry F. W., 521 3d St., Brooklyn, Kings Co.
 *Robb, William H., Amsterdam, Montgomery Co. Founder.
 Rochester, DeLancey, 469 Franklin St., Buffalo, Erie Co.
 Rochester, Thomas M., 326 De Kalb Ave., Brooklyn, Kings Co.
 Rodgers, Harris C., Benicia, Cal.
 Ross, Frank W., 251 Baldwin St., Elmira, Chemung Co. Original.
 Roth, Julius A., 308 E. 79th St., New York, New York Co.
 Rousseau, Zotique, 105 2d St., Troy, Rensselaer Co. Founder.
 Rudgers, Denton W., Hornellsville, Steuben Co.
 Rulison, L. B., Watervliet, Albany Co.
 Rushmore, J. D., 129 Montague St., Brooklyn, Kings Co. Founder.
 Russell, Charles P., 198 Genesee St., Utica, Oneida Co.
 Russell, William G., 27 McDonough St., Brooklyn, Kings Co. Original.
 Sabin, Wm. B., 1425 Broadway, Watervliet, Albany Co. Founder.
 Santry, A. B., Little Falls, Herkimer Co.
 *Sawyer, Conant, Auburn, Cayuga Co. Founder.
 Sayre, Lewis A., 285 5th Ave., New York, New York Co. Founder.
 Sayre, Reginald H., 285 5th Ave., New York, New York Co.
 Schmid, H. Ernst, White Plains, Westchester Co. Original.
 Schopp, Justin H., 127 E. Main St., Rochester, Monroe Co.
 Scully, Thomas P., Rome, Oneida Co.
 Seaman, Louis L., 18 W. 31st St., New York, New York Co.
 *Seaman, Frank G., Seneca Falls, Seneca Co.
 Segur, Avery, 281 Henry St., Brooklyn, Kings Co. Founder. (Retired list.)
 Selden, Robert, Catskill, Greene Co. Original.
 Seymour, W. Wotkyns, 105 3d St., Troy, Rensselaer Co. Founder.
 *Sharer, John P., Little Falls, Herkimer Co. Original.
 Shaw, Henry B., 21 E. 127th St., New York, New York Co.
 Sheffield, J. W., Sidney, Delaware Co.
 Shepard, A. W., 126 Willoughby St., Brooklyn, Kings Co. Original.
 Sherer, John D., Waterford, Saratoga Co. Original.
 Sherman, F. J., Ballston, Saratoga Co.
 Shradly, Arthur M., 60 W. 38th St., New York, New York Co.
 Shradly, John, 149 W. 126th St., New York, New York Co.
 Shradly, John Eliot, 140 W. 126th St., New York, New York Co.
 Silver, Henry M., 5 E. 43d St., New York, New York Co.

* Deceased.

- Simmons, Charles E., 762 Madison Ave., New York, New York Co.
Simmons, E. W., Canandaigua, Ontario Co. Founder. (Retired list.)
Simons, Frank E., Canajoharie, Montgomery Co.
Sizer, Nelson Buell, 336 Green Ave., Brooklyn, Kings Co. Original.
Skinner, Smith A., Hoosick Falls, Rensselaer Co. Original. (Retired list.)
Slater, Frank Ellsworth, Binghamton, Broome Co.
Small, John W., 75 Warburton Ave., Yonkers, Westchester Co.
Smelzer, Baxter T., Montour Falls, Schuyler Co.
Smith, A. Alexander, 40 W. 47th St., New York, New York Co.
Smith, Edward L., Binghamton, Broome Co.
Smith, F. A., Corinth, Saratoga Co.
Smith, Frederick A., 3 Clinton Place, Troy, Rensselaer Co.
Smith, George C., Delhi, Delaware Co.
Smith, H. Lyle, Hudson, Columbia Co. Original.
Smith, Samuel L., Smithville Flats, Chenango Co.
Smith, Samuel W., Hotel San Remo, 75th St., New York, New York Co. Original.
Smith, Stephen, 640 Madison Ave., New York, New York Co. Original.
Snook, George M., Parma, Monroe Co.
Southworth, Richmond Joseph, 1220 36th St., N. W., Washington, D. C. Original. (Retired list.)
Spicer, Walter E., 62 Charlton St., New York, New York Co.
Squibb, Edward H., 148 Columbia Heights, Brooklyn, Kings Co. Founder. (P. O. Box 760.)
Squibb, Edward R., 152 Columbia Heights, Brooklyn, Kings Co. Founder.
Squire, Charles L., 409 E. Church St., Elmira, Chemung Co.
Stearns, Benjamin W., Long Eddy, Sullivan Co.
Stearns, Henry S., 21 E. 44th St., New York, New York Co.
Steinke, C. O. H., 220 17th St., Brooklyn, Kings Co. Original.
Stewart, Douglas H., 111 W. 64th St., New York, New York Co.
Stewart, F. E., Merck's Building, University Place and 8th St., New York, New York Co.
Stewart, George D., 130 E. 36th St., New York, New York Co.
St. John, David, Hackensack, N. J. (Non-resident.)
Stockschlaeder, P., 186 South Ave., Rochester, Monroe Co.
Stockton, Charles G., 436 Franklin St., Buffalo, Erie Co.
Stone, Frank L., LeRoy, Genesee Co.
Stout, E. G., Utica State Hospital, Utica, Oneida Co.
Strong, Cyrus J., 60 W. 75th St., New York, New York Co.
Strong, Orville C., Colden, Erie Co.
Strong, Thomas D., Westfield, Chautauqua Co. Founder.
Stubbs, Roland H., Waterford, Saratoga Co. Original.
Sullivan, John D., 74 McDonough St., Brooklyn, Kings Co.

- Swan, William E., 160 State St., Albany, Albany Co.
 Swanick, A. A., Saratoga Springs, Saratoga Co.
 Swartwout, H. B., Port Jervis, Orange Co.
 Sweeney, James M., 78 Varick St., Utica, Oneida Co.
 Sweet, Joshua J., Unadilla, Otsego Co.
 Sweetman, J. T., Jr., Ballston, Saratoga Co.
 Syms, Parker, 50 W. 47th St., New York, New York Co.
 Taber, R. C., Tonawanda, Erie Co.
 Taylor, John H., Holley, Orleans Co. Original.
 Tefft, Charles B., Room 20, Arcade, Utica, Oneida Co.
 *Thayer, William Henry, Berkshire, Mass. (Retired list.)
 Thomas, T. Gaillard, 600 Madison Ave., New York, New York Co.
 Founder.
 Thompson, R. A., Norwich, Chenango Co.
 Thompson, Amos W., Saratoga Springs, Saratoga Co.
 Thompson, Von Beverhout, 111 W. 43d St., New York, New York Co.
 Thornton, William H., 572 Niagara St., Buffalo, Erie Co.
 Thwing, Clarence, Ft. Wrangel, Alaska.
 Tompkins, Fred J., 128 2d Ave., Lansingburgh, Rensselaer Co.
 Tompkins, H. C., Knowlesville, Orleans Co. Founder. (Retired list.)
 Townsend, Charles E., 231 Liberty St., Newburgh, Orange Co.
 Townsend, Morris W., Bergen, Genesee Co. Founder.
 Trautman, Alex., 12 W. 22d St., New York, New York Co.
 *Tremaine, Wm. S., 217 Franklin St., Buffalo, Erie Co. Founder.
 Tripp, John D., Auburn, Cayuga Co. Original.
 *Truax, J. G., 17 E. 127th St., New York, New York Co.
 Trull, H. P., Williamsville, Erie Co.
 Tucker, Carlos P., 43 W. 26th St., New York, New York Co. Founder.
 Turner, Melvin H., Ticonderoga, Essex Co. Original.
 Tuttle, Charles Alling, 129 Whalley Ave., New Haven, Connecticut.
 (Non-resident.)
 Twohey, John J., 301 Masten St., Buffalo, Erie Co.
 Vanderhoof, Frederick D., Phelps, Ontario Co. Original.
 *Vanderveer, J. C., Monroe, Orange Co.
 Vanderveer, J. R., Monroe, Orange Co.
 Van de Warker, Ely, 404 Fayette Park, Syracuse, Onondaga Co.
 Founder.
 Van Etten, Cornelius S., Rhinebeck, Dutchess Co.
 Van Hovenberg, Henry, Kingston, Ulster Co. Original.
 Van Vranken, Adam T., 1603 3d Ave., Watervliet, Albany Co. Original.
 Van Zandt, Henry C., Schenectady, Schenectady Co. Original.
 Varney, Miles E., Saratoga Springs, Saratoga Co.
 Vedder, George W., Philmont, Columbia Co.
 Veeder, Andrew T., 93 Fifth Ave., Pittsburgh, Pa.
 Vincent, Ludger C., 350 W. 58th St., New York, New York Co.
 Wainwright, John W., 141 Lexington Ave., New York, New York Co.

* Deceased.

- Wales, Theron A., Elmira, Chemung Co. Original.
- Walker, James E., Hornellsville, Steuben Co.
- Wall, Charles A., 306 Hudson St., Buffalo, Erie Co.
- Wallace, Edwin E., Jasper, Steuben Co.
- Wallach, Joseph G., The Cascade, W. 87th St., New York, New York Co. Original.
- Walser, William C., West New Brighton, Richmond Co.
- Walsh, Simon J., 25 E. 128th St., New York, New York Co.
- Wandless, Henry W., 39 W. 36th St., New York, New York Co.
- *Ward, Charles S., 30 W. 33d St., New York, New York Co. Founder.
- Ward, John J., Ellenville, Ulster Co.
- Ward, R. H., 53 4th Street, Troy, Rensselaer Co.
- Warner, John W., 19 York Ave., Saratoga Springs, Saratoga Co.
- Washburn, Wickes, 21 E. 21st St., New York, New York Co.
- Waterworth, William, 3 Hancock St., Brooklyn, Kings Co.
- Webster, W. B., Schuylerville, Saratoga Co.
- Welles, S. R., Waterloo, Seneca Co. (Retired list.)
- Wells, William L., New Rochelle, Westchester Co. Original.
- Weston, Albert T., 226 Central Park West, between 82d and 83d Sts., New York, New York Co.
- Whitcomb, John L. C., Liberty, Sullivan Co.
- White, Charles B., 107 W. 72d St., New York, New York Co.
- White, J. Blake, 1013 Madison Ave., New York, New York Co.
- White, William A., Binghamton, Broome Co.
- Wieber, Adolph, 181 S. 5th St., Brooklyn, Kings Co.
- Wiener, Joseph, 1046 5th Ave., New York, New York Co. Founder.
- Wiggin, Frederick Holme, 55 W. 36th St., New York, New York Co.
- Williams, George O., Green, Chenango Co.
- Williams, William H., 207 17th St., Brooklyn, Kings Co. Original.
- Wilson, M. J., Warsaw, Wyoming Co.
- Wilson, Thomas, Claverack, Columbia Co. Founder.
- Winne, J. V. E., Sidney, Delaware Co.
- Witter, G. H., Wellsville, Alleghany Co.
- Woodend, William E., Hotel St. Andrew, West 72d St., New York, New York Co.
- Woodhull, Edward D., Monroe, Orange Co.
- Woodruff, E. Gould, Auburn, Cayuga Co.
- Woodruff, R. Allen, Philmont, Columbia Co.
- Woodward, J. H., 58 W. 40th St., New York, New York Co.
- Woodworth, T. Floyd, Kinderhook, Columbia Co.
- Woolworth, E. E., 864 Sterling Place, Brooklyn, Kings Co.
- Wyckoff, C. C., 482 Delaware Ave., Buffalo, Erie Co. Founder.
- Wyckoff, R. M., 532 Clinton Ave., Brooklyn, Kings Co. Founder.
- Wyeth, J. A., 19 W. 35th St., New York, New York Co. Original.
- Yankauer, Sidney, 163 E. 79th St., New York, New York Co.
- Young, John D., Starkville, Herkimer Co. Original.

*Deceased.

Young, Wm., Cold Spring, Putnam Co. Founder. (Retired list.)
Zeh, Edgar, Waterford, Saratoga Co.
Zeh, Merlin J., 1521 Broadway, Watervliet, Albany Co.

Of 164 Founders, 88 remain on the list; of 286 Original Fellows, 142 remain on the list. Total Fellowship, 642.

RETIRED FELLOWS.

E. S. F. Arnold, Newport, R. I. (1898).
Charles G. Bacon, Fulton, Oswego County (1891).
M. M. Bagg, Utica, Oneida County (1891).
George B. Banks, Hartsdale, Westchester County (1892).
Lyman Barton, Willsborough, Essex County (1890).
N. W. Bates, Central Square, Oswego County (1897).
F. R. Bentley, Cheshire, Ontario County (1891).
William N. Bonesteel, Troy, Rensselaer County (1890).
Amos H. Brundage, Brooklyn, Kings County (1897).
F. A. Burghardt, Buffalo, Erie County (1899).
M. L. Chambers, Port Jefferson, Suffolk County (1898).
Alonzo Churchill, Utica, Oneida County (1890).
C. L. Dayton, Buffalo, Erie County (1891).
Byron DeWitt, Oswego, Oswego County (1898).
Philip DuB. HoornBeek, Ridgefield, Conn. (1895).
Philip DuB. HoornBeek, Wawarsing, Ulster County (1891).
*Samuel Ingraham, Palmyra, Wayne County (1890).
Homer O. Jewett, Cortland, Cortland County (1898).
Jonathan S. Kneeland, Onondaga County (1890).
John Lambert, Salem, Washington County (1898).
John B. Nold, Utica, Oneida County (1894).
George E. Pierson, Kirkwood, Broome County (1895).
H. A. Pooler, 34 Gramercy Park, New York, New York County (1892).
H. N. Porter, Washington, D. C. (1891).
Avery Segur, 281 Henry St., Brooklyn, Kings County (1893).
E. W. Simmons, Canandaigua, Ontario County (1892).
S. A. Skinner, Hoosick Falls, Rensselaer County (1895).
R. J. Southworth, Washington, D. C. (1894).
*W. H. Thayer, Berkshire, Mass. (1895).
H. C. Tompkins, Knowlesville, Orleans County (1893).
S. R. Wells, Waterloo, Seneca County (1894).
William Young, Cold Spring, Putnam County (1891).

NON-RESIDENT FELLOWS.

Stuart Eldridge, Yokohama, Japan.
Wm. Stevenson MacLaren, Litchfield, Conn.

*Deceased.

Donald Maclean, 72 Lafayette Ave., Detroit, Mich.

William Scott Muir, Truro, Nova Scotia.

David St. John, Hackensack, N. J.

Charles Alling Tuttle, 129 Whalley Ave., New Haven, Conn.

CORRESPONDING FELLOW.

Henry O. Marcy, 180 Commonwealth Ave., Boston, Mass. (1890).

*Deceased.

DECEASED FELLOWS.

DECEASED FELLOWS.

NAME.	Age	COUNTY.	PLACE OF BIRTH.	DATE OF DEATH.	MEDICAL COLLEGE.	YEAR OF GRADUATION.
Abell, Ira H. (F) ¹	71	Jefferson	Fairfield, Vt.	April 29, 1894.	Vermont Med. Coll. . . .	1844
Adams, John G. (F)	77	New York	New York City	June 19, 1884.	Coll. Phys. and Surg., N. Y.	1830
Allaben, O. M. (O) ²	83	Delaware	Delaware Co., N. Y. . .	Nov. 27, 1891.	Woodstock, Vt.	1831
Andrews, John S. (O)	61	Kings	Bristol, Conn.	Jan. 3, 1889.	Univ. City of New York .	1849
Andrews, Judson B. (F)	60	Erie	North Haven, Conn. . .	Aug. 3, 1894.	Yale Med. School	1863
Ashton, Isaiah H.	39	Westchester	Philadelphia, Pa. . . .	Feb. 16, 1889.	University of Pennsylvania	1870
Avery, George W. (F)	61	Chenango	Earlville, N. Y.	Nov. 1, 1888.	Albany Medical College .	1850
Ayres, Alexander (F)	74	Montgomery	Oppenheim, N. Y. . . .	Aug. 27, 1886.	Castleton, Vt.	1842
Babcock, Myron N. (F)	73	Saratoga	West Berkshire, Vt. . .	May 21, 1892.	Vermont Medical College .	1842
Ballou, William R.	29	New York	Bath, Me.	March 9, 1893.	Bellevue Hosp. Med. Coll.	1886
Barker, A. M. (O)	37	Erie	Kendall, Orleans Co., N. Y.	Dec. 6, 1887.	University of Buffalo . .	1877
Bartlett, F. W. (O)	71	Erie	Kingston, Mass.	March 17, 1897.	New York Med. Coll. . .	1854
Bathgate, James (O)	65	New York	New York	March 27, 1891.	Coll. Phys. and Surg., N. Y.	1846
Baynes, William T. (O)	48	Rensselaer	England	Jan. 22, 1892.	Albany Medical College .	1871
Bemus, William P.	63	Chautauqua	Chautauqua Co.	Sept. 19, 1890.	Berkshire Medical College	1847
Bennett, Thos. W. (O)	62	Sullivan	Altona	Nov. 27, 1896.	University of N. Y. . . .	1896
Blakeman, William N. (O)	85	New York	Roxbury, Conn.	Aug. 10, 1890.	Yale	1832
Booth, W. H. (O)	..	Oneida	. . . . .	. . . . .	. . . . .	. . . . .
Buchanan, Alexander (O)	65	New York	Glasgow, Scot.	Sept. 2, 1896.	New York Med. Coll. . .	1862
Buckley, Charles (O)	..	Monroe	. . . . .	. . . . .	University of Pennsylvania	1870
Bucklin, Daniel D. (O)	70	Rensselaer	Brunswick, N. Y. . . .	April 19, 1890.	Albany Medical College .	1846
Budd, J. Henry (O)	45	Ontario	United States	Feb. 25, 1890.	Buffalo Medical College .	1875

¹ (F) Founder.

² (O) Original Fellow.

Burchard, Thos. H. (O).	48	New York.	New York City	Nov. 15, 1896.	Bellevue Hosp. Med. Coll.	1872
Burton, M. H. (F).	62	Rensselaer	Albany, N. Y.	April 28, 1895.	Albany Medical College	1863
Burwell, George N. (O).	72	Erie	Norway, Herkimer Co. .	May 15, 1891.	University of Pennsylvania.	1843
Carroll, Alfred Ludlow (F)	60	New York	New York City	Oct. 30, 1893.	Univ. City of New York .	1855
Case, Mary W.	33	Rensselaer	New York State	Aug. 19, 1889.	Woman's Med. Coll., Phila.	1882
Chace, William (F) . . .	58	Chautauqua	St. Catharine's, Canada .	Dec. 27, 1891.	Coll. Phys. and Surg., N. Y.	1858
Church, Allen S. (F) . .	62	New York	Great Barrington, Mass..	Oct. 24, 1884.	Castleton, Vt.	1848
Clark, Alonzo	80	New York	Chester, Mass.	Sept. 13, 1887.	Coll. Phys. and Surg., N. Y.	1835
Clark, Simeon T. (O) . .	55	Niagara	Canton, Mass.	Dec. 24, 1891.	Berkshire Med. Coll. . .	1869
Coit, William N. (F) . .	52	Clinton .	Plattsburgh, N. Y. . . .	Aug. 4, 1886.	University of Pennsylvania	1856
Collins, Isaac G. (F) . .	53	Westchester	Granville, N. Y.	Dec. 18, 1885.	Albany Medical College .	1858
Collins, Thomas B. (O) .	61	Monroe .	Mendon, N. Y.	Feb. 17, 1888.	Jefferson Med. Coll., Phila.	1851
Cooper, William S. (F) .	70	Rensselaer	Scotland	May 26, 1890.	Albany Medical College	1860
Copley, Heman D. . . .	45	Chenango .	Harpersfield, N. Y. . . .	July 1, 1896.	Coll. Phys. and Surg., N. Y.	1875
Cornell, F. O. (O) . . .	29	Montgomery.	Glenville, N. Y.	Dec. 3, 1884.	Albany Medical College	1880
Cotes, J. R.	54	Genesee .	Batavia, N. Y.	March 20, 1884.	Med. Dep. Univ. Buffalo	1852
Creamer, Joseph	63	Kings . . .	Halifax, Nova Scotia . .	Jan. 6, 1893.	Coll. Phys. and Surg., N. Y.	1850
Cronyn, John F. (F) . .	70	Erie	Ireland	Feb. 11, 1898.	University of Toronto . .	1850
Cruttenden, Albert G. . .	75	Ontario .	Covington, N. Y.	June 7, 1890.	Willoughby Univ., Ohio .	1840
Dagenais, Alphonse (O)	50	Erie	Montreal, Can.	March 4, 1897.	Victoria University . . .	1869
Damainville, Lucien . .	52	New York	Erie, Pa.	Dec. 15, 1891.	Long Island Coll. Hosp. .	1860
Davidson, John (F) . . .	91	Queens . .	New York City	Dec. 26, 1884.	Lic. N. Y. St. Med. Soc. .	1829
De La Mater, S. G. (F) .	73	Schenectady.	Bethlehem, Alb. Co., N. Y.	June 23, 1888.	Albany Medical College .	1842
de Zouche, Isaac (F) . .	72	Fulton . .	. . . . .	Feb. 22, 1895.	Albany Med. Coll. . . .	1869
Du Bois, Abram (F) . . .	81	New York	Red Hook, N. Y.	Aug. 29, 1891.	Coll. Phys. and Surg., N. Y.	1835
Eager, William B. (O) . .	65	Orange . .	Orange Co.	Jan. 18, 1890.	Coll. Phys. and Surg., N. Y.	1848
Earll, George W. (F) . .	53	Onondaga .	Mottville, N. Y.	July 8, 1890.	Buffalo Medical College .	1858
Eastman, L. O.	40	Broome . .	Berkshill, N. Y.	Sept. 15, 1897.	University of Buffalo. . .	1889

DECEASED FELLOWS.—Continued.

NAME	AGE	COUNTY.	PLACE OF BIRTH.	DATE OF DEATH.	MEDICAL COLLEGE.	YEAR OF GRADUATION.
Edgerly, Edward F. (F)	50	Essex . . .	Moriah, Essex Co. . . .	June 23, 1889.	Albany Medical College .	1864
Elder, Jennie S. . . .	32	Onondaga . .	Syracuse, N. Y. . . .	Feb. 2, 1889.	Med. Dep. Syracuse Univ.	1878
Farrington, E. S. . . .	30	New York . .	. . . . .	Sept. 7, 1896.	Coll. Phys. and Surg., N. Y.	1892
Ferguson, James (O)	74	Warren . . .	Kortwright, N. Y. . . .	Oct. 27, 1892.	Castleton, Vt.	1841
Field, M. D.	41	New York . .	Nashville, Tenn. . . .	March 8, 1895.	Bellevue Hosp. Med. Coll. .	1879
Fitch, William (F) . . .	70	Tompkins . .	Franklin, N. Y.	Sept. 14, 1893.	Albany Medical College .	1846
Flint, Austin (F)	73	New York . .	Petersham, Mass. . . .	March 13, 1886.	Harvard Medical College .	1833
Flood, Patrick Henry (O)	72	Chemung . .	Pennsylvania	March 12, 1886.	Geneva Medical College .	1845
Fox, Eli	57	Herkimer . .	Columbia, N. Y.	Oct. 13, 1890.	Med. Dep. Univ. City N. Y.	1855
Fuller, Winfield S. (O) . .	48	Monroe . . .	Walworth, N. Y. . . .	Jan. 13, 1888.	Coll. Phys. and Surg., N. Y.	1861
Fuller, Robert	72	Schenectady .	Schenectady, N. Y. . . .	May 9, 1894.	Albany Med. Coll.	1875
Furman, Guido (O)	65	New York . .	Germany	Dec. 2, 1896.	University City of N. Y. .	1856
Furman, J. Henry (O) . . .	63	Westchester .	Clifton Park, N. Y. . . .	May 26, 1896.	Coll. Phys. and Surg., N. Y.	1864
Garrison, John P. (O) . . .	76	New York . .	New Brunswick, N. J. . .	April 1, 1891.	Jefferson Med. Coll., Phila.	1836
Gay, Charles C. F. (F) . . .	66	Erie	Pittsfield, Mass.	March 27, 1886.	Berkshire Medical College	1846
Gillis, William (F)	72	Franklin . . .	Cornwall, Can.	Feb. 17, 1894.	Castleton, Vt.	1849
Goldthwaite, Henry	52	New York . .	Mobile, Ala.	Jan. 3, 1895.	Bellevue Hosp. Med. Coll.	1876
Govan, William (F.)	65	Rockland . .	Barnet, Vt.	March 22, 1894.	New York Med. Coll. . . .	1854
Graves, Ezra (O)	56	Montgomery .	Russia, N. Y.	June 30, 1895.	University of Buffalo . . .	1865
Gray, John Perdue (F) . . .	61	Oneida	Half Moon, Pa.	Nov. 29, 1886.	University of Pennsylvania	1849
Gray, John W. (F)	53	Livingston . .	America	April 17, 1886.	University of New York .	1856
Green, Caleb (F)	73	Cortland . . .	La Fayette, N. Y.	May 10, 1893.	Geneva Medical College .	1844

29	Griswold, Gaspar (O)	New York	New York City	March 4, 1886.	Bellevue Hosp. Med. Coll.	1878
55	Guernsey, Desault (F)	Dutchess	Wilton, N. Y.	Dec. 9, 1885.	Coll. Phys. and Surg., N. Y.	1850
41	Hall, H. C. (O)	Broome	America	June 1, 1887.	University of New York	1869
38	Hall, John E. (O)	Albany	New Marlboro', Mass.	Nov. 3, 1886.	Albany Medical College	1877
73	Hamilton, Frank H. (F)	New York	Wilmington, Vt.	Aug 11, 1886.	University of Pennsylvania	1835
65	Hammer, Charles	Schenectady	Germany	April 7, 1897.	Goettingen, Germany	1854
67	Higgins, Seabury M. (O)	Onondaga	Brewster, Mass.	Dec. 9, 1889.	University City of N. Y.	1848
32	Hinds, Frederic J. (O)	Washington	East Greenwich, N. Y.	April 26, 1887.	Bellevue Hosp. Med. Coll.	1876
64	Hodgman, William H.	Saratoga				
41	Hogan, Michael K.	New York	County Clare, Ireland	Feb. 25, 1894.	Coll. Phys. and Surg., N. Y.	1858
86	Hollister, Edwin O. (O)	Ontario	Batavia, N. Y.	Oct. 8, 1887.	Bellevue Hosp. Med. Coll.	1874
36	Hubbard, George E.	New York	Natural Bridge, N. Y.	March 23, 1893.	Med. Dep. Univ. City N. Y.	1883
47	Hubbard, Samuel T. (F.)	New York	Haddam, Conn.	June 1, 1894.	Coll. Phys. and Surg., N. Y.	1835
76	Hughes, Henry R.	Oneida	So. Trenton, N. Y.	Sept. 27, 1894.	Bellevue Hosp. Med. Coll.	1876
51	Hühne, August (F)	Ulster	Germany	Dec. 2, 1897.	New York Med Coll.	1858
44	Hull, William H.	Rensselaer	Petersburgh, N. Y.	Dec. 1, 1894.	Albany Med. Coll.	1866
66	Hunt, James H. (O)	Orange	Centreville, Sullivan Co.	Dec. 20, 1892.	Bellevue Hosp. Med. Coll.	1872
82	Huntington, H. K. (O)	Westchester		Feb. 28, 1897.		
60	Husted, N. C. (F)	Westchester	Round Hill, Conn.	Nov. 19, 1891.	University City of N. Y.	1850
80	Hutchison, Joseph C. (F)	Kings	Old Franklin, Mo.	July 17, 1887.	University of Pennsylvania	1848
66	Hyde, Frederick (F)	Cortland	Whitney Point, N. Y.	Oct. 15, 1887.	Fairfield Medical College	1836
66	Ilgen, Ernst (O)	Kings	Bavaria	Mar. 4, 1897.	Munich.	1836
66	Ingraham, Samuel (O)	Wayne				
66	Johnston, Francis U. (F)	Richmond	New York City	Nov. 20, 1892.	Coll. Phys. and Surg., N. Y.	1852
66	King, James E. (O)	Erie	Warren, Pa.	Jan. 21, 1888.	Buffalo Medical College	1848
67	Kittridge, Chas. S. (F)	Dutchess			Coll. Phys. and Surg., N. Y.	1863
67	Knapp, Edwin A. (O)	Onondaga	New York State	Dec. 7, 1890.	Geneva Med. Coll.	1851
67	Knapp, John H. (O)	Cortland	New Fairfield, Conn.	April 30, 1886.	{ Chenango Co. Med. Soc. Geneva Med. Coll.	1843 1861

DECEASED FELLOWS.—Continued.

NAME.	AGE.	COUNTY.	PLACE OF BIRTH.	DATE OF DEATH.	MEDICAL COLLEGE.	YEAR OF GRADUATION.
Lamb, Milton M.	68	Rensselaer .	Verona, N. Y.	April 10, 1892.	Castleton, Vt.	1856
Lamont, John Campbell .	47	Wayne . .	Edinburgh, Scotland .	Dec. 13, 1887.	Med. Dep. Univ. City N. Y.	1862
Lauer, Eugene (O) . . .	40	New York .	Germany	Oct. 31, 1886.	Giessen and Marburg .	1868
Lester, Sullivan W. (O) .	40	Rensselaer .	Niantic, Conn.	Jan. 5, 1890.	Med. Dep. Univ. City N. Y.	1881
Linsly, Jared (F)	84	New York .	Northfield, Conn. . . .	July 12, 1887.	Coll. Phys. and Surg., N. Y.	1829
Long, Alfred J.	71	Washington .	Rutland, Vt.	Aug. 10, 1895.	Univ. City of New York. .	1853
Lusk, William T. (F) . .	59	New York .	Norwich, Conn.	June 12, 1897.	Bellevue Hosp. Med. Coll.	1864
Lyman, E. S. (O)	80	Chenango .	Torrington, Conn. . . .	Nov. 20, 1892.	Regents Univ. N. Y. . . .	1870
Magee, C. M.	42	Onondaga .	Groveland, N. Y. . . .	Oct. 29, 1896.	Bellevue Hosp. Med. Col.	....
Magee, Daniel (O) . . .	..	Rensselaer .	.. . . .	Jan. 4, 1897.	.. . . .	....
Matthews, David	60	New York .	Sullivan County	July 9, 1891.	Coll. Phys. and Surg., N. Y.	1860
Maury, Rutson	27	New York .	North Carolina	May 5, 1892.	Bellevue Hosp. Med. Coll.	1887
McClellan, Christopher R.	73	Kings . .	Maryland	Jan. 13, 1887.	University of Maryland. .	1835
McEwen, Robert C. (F) .	60	Saratoga .	Bainbridge, N. Y. . . .	Dec. 26, 1893.	Coll. Phys. and Surg., N. Y.	1856
McIlroy, Samuel H. . . .	..	New York .	.. . . .	Jan. 5, 1898	.. . . .	....
McLochlin, James A. . .	..	New York .	.. . . .	.. . . .	.. . . .	....
McNamara, L. J. (O) . .	..	New York .	.. . . .	Jan. 28, 1897.	.. . . .	....
McTammany, George H. .	31	Rensselaer .	Troy, N. Y.	April 12, 1891.	Albany Medical College .	1884
McTammany, Wm. F. (O) .	36	Rensselaer .	Troy, N. Y.	July 21, 1888.	Bellevue Hosp. Med. Coll.	1880
Merritt, George (O) . . .	..	Otsego . .	.. . . .	.. . . .	Castleton Med. Coll. . . .	1850
Mitchell, Howard E. (F.) .	49	Rensselaer .	Hudson, N. Y.	Aug., 1894.	University of Maryland .	1882
Moore, Joseph W. (F) . .	47	Albany . .	Troy, N. Y.	Sept. 9, 1886.	Castleton, Vt.	1859
Morrell, Isaac	79	Chemung .	Cornish, Me.	Sept. 8, 1887.	Bowdoin Medical College .	1832

66	Murdoch, J. B.	Non Resident	Glasgow, Scot.	Oct. 29, 1896.	Coll. Phys. and Surg., N. Y.	1854
75	Murray, William D. (O)	Erie	Whiting, Vt.	May 11, 1895.	Geneva Med. Coll.	1854
67	Nichols, Henry W. (F)	Ontario	Killenaule, Ireland	Feb. 26, 1896.	University of New York	1857
55	O'Meagher, William	New York	England	Aug. 24, 1884.	Med. Dep. Univ. Buffalo	1884
62	Pask, William (O)	Erie	Sand Lake, N. Y.	April 4, 1884.	Albany Medical College	1851
77	Peck, M. R. (O)	Warren	Troupsburg, N. Y.	April 3, 1894.	Geneva Med. Coll.	1845
90	Perry, Nathaniel M. (O)	Steuben	Bridgewater, Vt.	April 15, 1893.	Castleton, Vt.	1836
	Pollard, Abiathar	Essex	New York	Dec. 14, 1887.	{ Ontario Co. Med. Soc.	1837
71	Pomeroy, Charles G. (F)	Wayne	Morial, N. Y.	July 11, 1895.	{ Jefferson Medical Coll.	1850
56	Porteous, J. G. (F)	Dutchess	Norway, N. Y.	Jan. 2, 1898.	Harvard	1862
89	Preston, John R. (O)	Saratoga	New York City	Sept. 24, 1888.	Fairfield Med. Coll.	1833
54	Pryer, W. Chardavoyne (F)	Westchester	Walkill, N. Y.	Dec. 6, 1885.	Coll. Phys. and Surg., N. Y.	1862
57	Purdy, Isaac (O)	Sullivan	New York	July 27, 1895.	Castleton, Vt.	1851
	Ransom, H. B.	New York	Columbia, Herkimer Co.	Dec. 22, 1886.	Coll. Phys. and Surg., N. Y.	1857
	Read, Ira B.	New York.	Mechanicsville, N. Y.	Jan. 12, 1894.	Fairfield Med. Coll., N. Y.	1830
79	Reynolds, Rufus C. (F)	Monroe	United States	April 20, 1887.	Albany Med. Coll.	1872
44	Rice, George	Saratoga	Angelica, N. Y.	Jan. 4, 1887.	University of Buffalo	1848
63	Ring, William (F)	Erie	Montgomery Co.	May 24, 1887.	Buffalo Medical College	1862
49	Robinson, Joseph W.	Steuben	Rochester, N. Y.	Dec. 4, 1888.	Albany Medical College	1865
55	Robb, W. H. (F)	Montgomery	Saxton's River, Vt.	Nov. 17, 1896.	University of Pennsylvania	1848
63	Rochester, Thomas F. (F)	Erie	County Dorset, Eng.	Jan. 2, 1890.	Albany Medical College	1836
56	Sabin, Robert Hall (F)	Albany	New York City	Aug. 19, 1889.	Royal Coll. Surg., London.	1832
84	Sabine, G. A. (O)	New York	Ulster Co., N. Y.	Jan. 27, 1895.	Bellevue Hosp. Med. Coll.	1876
38	Sayre, Lewis Hall (F)	New York	Perthshire, Scot.		Geneva Medical College	1848
65	Schoonmaker, E. J. (F)	Seneca				1848
	Seaman, Frank G.	Seneca				1848
77	Selden, O. G. (O)	Greene			Starling Med. Coll.	1867

DECEASED FELLOWS.—*Concluded.*

NAME.	AGE.	COUNTY.	PLACE OF BIRTH.	DATE OF DEATH.	MEDICAL COLLEGE.	YEAR OF GRADUATION.
Sharer, J. P. (O)	..	Herkimer.	..	..	..	....
Skiff, George V. (O)	53	New York.	Pike, N. Y.	Jan. 28, 1890.	Univ. City of New York	1860
Slack, Henry (F)	57	Dutchess	Albany, N. Y.	Dec. 10, 1886.	Albany Medical College	1852
Slocum, J. O. (F)	65	Onondaga.	Pompey, N. Y.	Mar. 3, 1885.	Castleton, Vt.	1846
Smith, David M.	35	Yates	New York City	Mar. 19, 1891.	Bellevue Hosp. Med. Coll.	1877
Smith, J. Lewis (O)	70	New York.	Onondaga Co., N. Y.	June 9, 1897.	Coll. Phys. and Surg., N. Y.	1853
Smith, Joseph T. (F)	60	Ontario	Farmington, N. Y.	Dec. 9, 1890.	Jefferson Med. Coll., Phila.	1854
Smith, Marcellus R. (O)	74	Cortland	Taylor, N. Y.	Dec. 11, 1890.	Geneva Medical College	1847
Sprague, J. A. (O)	43	Wayne	Williamson, N: Y.	Mar. 9, 1897.	Univ. City of New York.	1879
Sprague, Lathrop S.	77	Wayne	Bristol, N. Y.	Dec. 4, 1897.	Geneva Med. Coll.	1845
Sprague, William B. (F)	55	Genesee	Pavilion, N. Y.	Mar. 16, 1891.	University of Buffalo	1857
Squire, Truman Hoffman	66	Chemung	Russia, Herkimer Co.	Nov. 27, 1889.	Coll. Phys. and Surg., N. Y.	1848
Steele, Charles G.	27	Erie	Buffalo, N. Y.	Feb. 12, 1888.	University of Buffalo	1886
Steinführer, Gustavus A. (F)	37	Schenectady	Germany	July 2, 1890.	Coll. Phys. and Surg., N. Y.	1874
Stevens, Frederick P. (O)	31	New York	Ithaca, N. Y.	Dec. 4, 1884.	Bellevue Hosp. Med. Coll.	1877
Stevenson, William G.	44	Rockland	Troy, Ohio	Feb. 3, 1888.	Bellevue Hosp. Med. Coll.	1864
Sutton, George Samuel	63	Dutchess	Louisville, N. Y.	Sept. 6, 1888.	Coll. Phys. and Surg., N. Y.	1859
Sweet, Joseph (O)	73	Otsego	Falland, Conn.	Aug. 3, 1895.	Philadelphia Med. Coll.	1848
Taylor, Isaac E. (F)	79	New York	Philadelphia, Pa.	Oct. 30, 1889.	University of Pennsylvania	1834
Thayer, W. H.	..	..	..	..	..	....
Traver, Richard D. (O)	56	Rensselaer	Half Moon, N. Y.	May 17, 1895.	Bellevue Hosp. Med. Coll.	1867
Tremaine, Wm. S. (F)	59	Erie	Canada.	Jan. 9, 1898.	University Penn.	1859
Truax, J. G.	..	New York	..	..	..	....

Van Dusen, Melville E.	36	Steuben . . .	Wheeler, N. Y.	June 15, 1891.	Med. Dep. Univ. Mich. . .	1879
Van Wyck, R. C. (O) . . .	52	Dutchess . . .	Hopewell Junction, N. Y.	Jan. 28, 1896.	Coll. Phys. and Surg., N. Y.	1867
Vaughn, Frank O. (O) . . .	44	Erie	Buffalo, N. Y.	Mar. 18, 1891.	Med. Dep. Buffalo Univ. .	1880
Ward, Charles S. (F) . . . .	..	New York . . .	. . . . .	. . . . .	. . . . .	....
Warner, Fred. M. . . . .	..	New York . . .	. . . . .	Oct. 9, 1895.	Coll. Phys. and Surg., N. Y.	1880
Webb, Edwin (O)	85	Queens	Devonport, England . . .	Jan. 29, 1890.	Coll. Phys. and Surg., N. Y.	1825
West, M. Calvin	58	Oneida	Rome, N. Y.	Oct. 20, 1891.	Michigan University . . .	1860
White, Francis V.	56	New York . . .	New York City	Oct. 9, 1889.	Univ. City of New York . .	1855
White, William T. (F) . . .	64	New York . . .	Richmond, Me.	Sept. 17, 1893.	New York Med. Coll. . . .	1855
Wieber, George (O)	70	Kings	Weitzler, Germany	Jan. 31, 1896.	Kings Co. Med. Soc. . . .	1875
Willis, A. B.	43	Schenectady .	Coeymans, N. Y.	May 10, 1891.	Albany Medical College . .	1870
Winship, Cornelius A. (O)	62	Rensselaer . .	Litchfield, Conn.	Feb. 14, 1888.	Albany Medical College . .	1858
Wood, Charles S. (F)	65	New York . . .	Litchfield, Conn.	Feb. 1, 1890.	Jefferson Med. Coll., Phila.	1851
Woodend, William D. (F) . .	61	Suffolk	Portsmouth, Va.	Mar. 8, 1893.	University of Pennsylvania	1855
Young, John (O)	71	Dutchess . . .	Ireland	Sept. 2, 1893.	Coll. Phys. and Surg., N. Y.	1844
Young, Oscar H. (O)	43	Delaware . . .	Pennsylvania	Jan. 21, 1889.	Jefferson Med. Coll., Phila.	1876

Total Deceased Fellows, 187.

ORGANIZATIONS IN AFFILIATION WITH THE NEW
YORK STATE MEDICAL ASSOCIATION.

HORNELLSVILLE MEDICAL ASSOCIATION.

KINGS COUNTY MEDICAL ASSOCIATION.

MEDICAL ASSOCIATION OF TROY AND VICINITY.

NEW YORK COUNTY MEDICAL ASSOCIATION.

ONTARIO COUNTY MEDICAL SOCIETY.

INDEX.

- Address of welcome and report of committee of arrangements, Dr. FREDERICK HOLME WIGGIN, 20.
- Alcohol, the passing of, Dr. JOHN M. FARRINGTON, 326.
- Amputation at the knee-joint in gangrene of the toes and foot, a method of, Dr. STEPHEN SMITH, 47.
- AYRES, DOUGLAS, president's address, a résumé of medical and surgical progress, 24.
- BIGGS, CHAUNCEY P., some thoughts on the rational treatment of disease, 169.
- BISSELL, EVELYN L., memoir of Dr. CHARLES SAMUEL WARD, 681.
- Branch, First, officers for 1899, 5; report of, 690.
- Second, officers for 1899, 5; report of, 691.
- Third, officers for 1899, 6; report of, 692.
- Fourth, officers for 1899, 7; report of, 695.
- Fifth, officers for 1899, 7; report of, 697.
- BROOKS, LEROY J., diagnosis and indications for treatment in chronic intestinal obstruction, 276.
- discussion on true and false medical and other charities, 167.
- subnormal temperature, 52.
- Cataract, some observations of general interest regarding the course and management of, Dr. J. H. WOODWARD, 344.
- Catgut, the use of in surgery and the ideal method of preparing it, Dr. C. C. FREDERICK, 396.
- Catgut sutures, the use of in ventrofixation of the uterus, Dr. J. E. JANVRIN, 320.
- Coccyx, the, Dr. J. E. WALKER, 381.
- Committee of arrangements for 1898-'99, 2.
- Committee of arrangements, report of, 20.
- Council, annual report of, 723.
- Crushing injuries, conservative surgery in, with a summary of three hundred and thirty-seven cases, Dr. JAMES G. HUNT, 33.
- Delegates and invited guests, list of, 19.
- Dental pathology in its relationship to general health, Dr. DWIGHT L. HUBBARD, 66.
- Dermoid cysts of the ovary, Dr. CRAWFORD E. FRITTS, 469.
- Diagnosis and therapeusis, Dr. H. D. DIDAMA, 123.
- DIDAMA, H. D., diagnosis and therapeusis, 123.
- discussion on the passing of alcohol, 332.
- discussion on tuberculosis, 94.
- discussion on true and false medical and other charities, 168.
- DONAHUE, F. A., tuberculosis, 81.
- Drugs versus cardiac insufficiency, Dr. O. T. OSBORNE, 174.
- DUDLEY, A. PALMER, discussion on true and false medical and other charities, 167.
- ELIOT, GUSTAVUS, neuralgic affections of the head, 208.
- ERDMANN, JOHN F., intestinal obstruction due to intussusception and volvulus, 286.
- Eye lesions in some diseases of the kidney, Dr. HENRY S. OPPENHEIMER, 336.
- FARRINGTON, JOHN M., the passing of alcohol, 326.
- discussion on the treatment of cases of pulmonary tuberculosis that cannot go away from home, 108.
- Fellows, list of, 727.
- Fellows registered at fifteenth annual meeting, list of, 14.
- FERGUSON, E. D., the causes of acute intestinal obstruction, with a description of their mechanism, 223.
- operative cure of inguinal hernia in men, 368.

- FINDER, WILLIAM, JR., discussion on true and false medical and other charities, 166.
- Fistulous opening, case of, between the ileum and the fundus of the bladder, of fourteen years' duration; laparotomy; closure of the openings by suture and of the abdominal wall without drainage; primary union, with cure, Dr. H. O. MARCY, 135.
- FREDERICK, C. C., discussion on insanity following surgical operations, 395.
the use of catgut in surgery and the ideal method of preparing it, 396.
- FRENCH, S. H., memoir of Dr. WILLIAM H. ROBB, 677.
- FRITTS, CRAWFORD E., dermoid cysts of the ovary, 469.
- Frontal sinusitis, acute, Dr. HENRY L. SWAIN, 149.
- Genital neuralgia and the genito-reflex pains, Dr. FREDERICK PORTER HAMMOND, 109.
- GOULEY, J. W. S., discussion on a method of amputation at the knee-joint in gangrene of the toes and foot, 50.
discussion on technique and use of saline infusions, 466.
notes on intestinal obstruction from impaction of fæces, enteroliths, and foreign bodies, 249.
urethral stricture; a few thoughts on its genesis and management, 77.
- GRANGER, WILLIAM D., insanity following surgical operations, 387.
- HAMMOND, FREDERICK PORTER, genital neuralgia and the genito-reflex pains, 109.
- HANNAN, J. C., memoir of Prof. JOHN CRONYN, 662.
- HIGGINS, F. W., senility, 442.
- HILLIS, THOMAS J., what to do to be saved; being the conclusion of an inquiry into the causes leading to the abuse of medical charity, 403.
- HOLT, E. E., discussion on dental pathology in its relationship to general health, 76.
discussion on the teaching of physiology and hygiene in public schools, 46.
- HOLT, E. E., discussion on true and false medical and other charities, 166.
- HUBBARD, DWIGHT L., dental pathology in its relationship to general health, 66.
- HUNT, JAMES G., conservative surgery in crushing injuries, with a summary of three hundred and thirty-seven cases, 33.
- Inguinal hernia in men, operative cure of, Dr. E. D. FERGUSON, 368.
- Insanity, classification and differential diagnosis of some of the commoner forms of, Dr. J. JOSEPH KINDRED, 361.
- Insanity following surgical operations, Dr. WILLIAM D. GRANGER, 387.
- Intestinal obstruction, acute, the causes of, with a description of their mechanism, Dr. E. D. FERGUSON, 223.
- Intestinal obstruction, acute, the diagnosis and indications for treatment of, Dr. J. D. RUSHMORE, 262.
- Intestinal obstruction, chronic, the causes of, with a description of their mechanism, Dr. GEORGE D. STEWART, 243.
- Intestinal obstruction, chronic, diagnosis and indications for treatment in, Dr. LEROY J. BROOKS, 276.
- Intestinal obstruction, introduction to the discussion of, Dr. PARKER SYMS, 216.
- Intestinal obstruction from impaction of fæces, enteroliths, and foreign bodies, notes on, Dr. J. W. S. GOULEY, 249.
- Intestinal obstruction due to intussusception and volvulus, Dr. JOHN F. ERDMANN, 286.
- Intestinal obstruction, the technics of the operative treatment of, Dr. FREDERICK HOLME WIGGIN, 302.
- JANVRIN, J. E., the use of catgut sutures in ventro-fixation of the uterus, 320.
- KINDRED, J. JOSEPH, classification and differential diagnosis of some of the commoner forms of insanity, 361.

- KNOPF, S. A., discussion on the treatment of cases of pulmonary tuberculosis that cannot go away from home, 107, 108.
discussion on tuberculosis, 95.
- LESTER, ELIAS, memoir of Dr. FRANK G. SEAMAN, 685.
- List of corresponding Fellows, 767.
deceased Fellows, 769.
delegates and invited guests, 19.
Fellows, alphabetical, 751.
Fellows, by district and county, 729.
Fellows registered at fifteenth annual meeting, 14.
non-resident Fellows, 766.
presidents and vice-presidents, 9.
retired Fellows, 766.
- MARCY, H. O., case of fistulous opening between the ileum and the fundus of the bladder of fourteen years' duration; laparotomy; closure of the openings, by suture and of the abdominal wall without drainage; primary union, with cure, 135.
discussion on the technics of the operative treatment of intestinal obstruction, 318.
discussion on tuberculosis, 94.
- Materia medica, pharmacy, and therapeutics of the year ending October 1, 1898, brief comments on, Dr. E. H. SQUIBB, 474.
- Medical charity: what to do to be saved, being the conclusion of an inquiry into the causes leading to the abuse of, Dr. THOMAS J. HILLIS, 403.
- Medical and other charities, true and false, Dr. WIKES WASHBURN, 159.
- Medical and surgical progress, résumé of, Dr. DOUGLAS AYRES, 24.
- Memoirs,—
JOHN CRONYN, M. D., 662.
SAMUEL H. MCILROY, M. D., 687.
WILLIAM H. ROBB, M. D., 677.
FRANK G. SEAMAN, M. D., 685.
WILLIAM HENRY THAYER, M. D., 673.
JOHN GILBERT TRUAX, M. D., 669.
J. R. VANDERVEER, M. D., 679.
CHARLES SAMUEL WARD, M. D., 681.
- Neuralgic affections of the head, Dr. GUSTAVUS ELIOT, 208.
- NEWMAN, ROBERT, discussion on the passing of alcohol, 334.
- O'BRIEN, M. C., discussion on a method of amputation at the knee-joint in gangrene of the toes and foot, 51.
discussion on technique and use of saline infusions, 467.
- Officers and council for 1897-'98, 1.
1898-'99, 3.
- Officers of the branch associations for 1899, 5.
- Open operation in the treatment of recent fracture of the patella, the results of, Dr. CHARLES PHELPS, 185.
- OPPENHEIMER, HENRY S., eye lesions in some diseases of the kidney, 336.
- OPPENHEIMER, SEYMOUR, tuberculosis of the middle ear, 141.
- Organizations affiliated with the New York State Medical Association, 779.
- OSBORNE, O. T., drugs versus cardiac insufficiency, 174.
- OVERTON, FRANK, discussion on subnormal temperature, 64.
on the teaching of physiology and hygiene in public schools, 41.
- PHELPS, CHARLES, the results of open operation in the treatment of recent fracture of the patella, 185.
- Physiology and hygiene in public schools, on the teaching of, Dr. FRANK OVERTON, 41.
- Pneumogastric nerve, a note as to the function of, in the production of stomach diseases, Dr. JULIUS POHLMAN, 324.
- POHLMAN, JULIUS, a note as to the function of the pneumogastric nerve in the production of stomach diseases, 324.
- POOLER, H. A., discussion on the passing of alcohol, 333.
discussion on tuberculosis, 93.
- President's address, Dr. DOUGLAS AYRES, 24.
- Presidents and vice-presidents, list of, 9.
- Proceedings of the fifteenth annual meeting, 717.
- Pulmonary tuberculosis, the treatment of cases of, that cannot go away from home, Dr. DELANCEY ROCHESTER, 97.

- Rational treatment of disease, some thoughts on, Dr. CHAUNCEY P. BIGGS, 169.
- REID, W. B., discussion on the passing of alcohol, 334.
discussion on true and false medical and other charities, 168.
- REILLY, THOMAS F., technique and use of saline infusions, 449.
- Rickets, a short paper on, Dr. CHARLES ALLING TUTTLE, 202.
- ROCHESTER, DELANCEY, discussion on acute frontal sinusitis, 158.
discussion on dental pathology in its relationship to general health, 76.
discussion on subnormal temperature, 64.
discussion on the teaching of physiology and hygiene in public schools, 46.
the treatment of cases of pulmonary tuberculosis that cannot go away from home, 97.
- RUSHMORE, J. D., the diagnosis and indications for treatment of acute intestinal obstruction, 262.
- Saline infusions, technique and use of, Dr. THOMAS F. REILLY, 449.
- Senility, Dr. F. W. HIGGINS, 442.
- SHRADY, JOHN, memoir of Dr. SAMUEL H. MCILROY, 687.
memoir of Dr. JOHN GILBERT TRUAX, 669.
- SMITH, STEPHEN, a method of amputation at the knee-joint in gangrene of the toes and foot, 47.
- SQUIBB, E. H., brief comments on the materia medica, pharmacy, and therapeutics of the year ending October 1, 1898, 474.
- SQUIBB, E. R., discussion on the passing of alcohol, 332.
- STEWART, GEORGE D., the causes of chronic intestinal obstruction, with a description of their mechanism, 243.
- Subnormal temperature, Dr. LEROY J. BROOKS, 52.
- SWAIN, HENRY L., acute frontal sinusitis, 149.
- SYMS, PARKER, introduction to the discussion of intestinal obstruction, 216.
- Tuberculosis, Dr. F. O. DONAHUE, 81.
- Tuberculosis of the middle ear, Dr. SEYMOUR OPPENHEIMER, 141.
- TUTTLE, CHARLES ALLING, a short paper on rickets, 202.
- Urethral stricture: a few thoughts on its genesis and management, Dr. J. W. S. GOULEY, 77.
- VAN VRANKEN, A. T., discussion on tuberculosis, 94.
- WALKER, J. E., the coccyx, 381.
- WASHBURN, WIKES, discussion on the passing of alcohol, 333.
true and false medical and other charities, 159.
- WIGGIN, FREDERICK HOLME, address of welcome and report of the committee of arrangements, 20.
discussion of a case of fistulous opening between the ileum and the fundus of the bladder, 139.
discussion on insanity following surgical operations, 395.
discussion on technique and use of saline infusions, 467.
the technics of the operative treatment of intestinal obstruction, 302.
- WOODWARD, J. H., some observations of general interest regarding the course and management of cataract, 344.
- WYCKOFF, R. M., memoir of Dr. WILLIAM HENRY THAYER, 673.



